K226007 BSR 4C
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TOA

Q1.

$\boxed{11101}$ → Accepted

a. $(0+1)^*$

$L(0+1)^* \Rightarrow \{0,1\}^*$

$L\{0,1\}^* = \{\lambda, 0, 1, 01, 111, 11101 \ldots$

→ 11101, is a part.

b. $R = 1^* 0^* 1^*$

$L(1^* 0^* 1^*) \Rightarrow$

$\Rightarrow \{\lambda, 1, 0, 10, 11, 101, \ldots 11101 \ldots$

~~11101 is a~~

→ R have 11101.

c. 110^*01

$L \Rightarrow L(11)\,L(0)^*\,L(01)$

$L(0)^* = \{\lambda, 0, 00, 000, \ldots\}$

$L(110^*01) = \{1101, 11001, 110001 \ldots\}$

$\rightarrow L(110^*01)$ do not have 11101.

d. $(11)^*\,0\,(01)^*$

$L(11)^* = \{\lambda, 11, 1111, 111111, \ldots\}$

$L(01)^* = \{\lambda, 01, 0101, 010101, \ldots\}$

$L((11)^*0(01)^*) \Rightarrow$

$\{0, 110, 001, 11001, 111100101, \ldots\}$

$\rightarrow L((11)^*0(01)^*)$ do not have

11101

$\boxed{11101}$

(e) $(1110)^* \, 0^* \, 1^*$

$L = L(1110)^* \, L(0)^* \, L(1)^*$

$L(1110)^* = \{\lambda, 1110, 11101110, \ldots\}$

$L(0)^* = \{\lambda, 0, 00, 000, \ldots\}$

$L(1)^* = \{\lambda, 1, 11, 111, \ldots\}$

$L\{(1110)^* \, 0^* \, 1^*\} \Rightarrow$

$\{\lambda, 1110, 0, 1, 11101, 111001, \ldots\}$

→ The language accept 11101.

(f) $(11 + 0)^* (00 + 01)^*$

$L = \{(L(11) \cup L(0))^* (L(00) \cup L(01))^*\}$

$L((11+0)^*) = \{\lambda, 11, 0, 1111, 00, \ldots\}$

$L((00+01)^*) = \{\lambda, 00, 01, 0001, 00001, \ldots\}$

$L((11+0)^* (00+01)^*) \Rightarrow$

$\{\lambda, 11, 0, 00, 01, 1100, 1101, 000, 001, 1100001, \ldots\}$

→ This language does not accept 11101.

$R = (0+1)^*$

$R : (0)^* \, 101^*$

$R : (010)^* (0)^* \, 1$

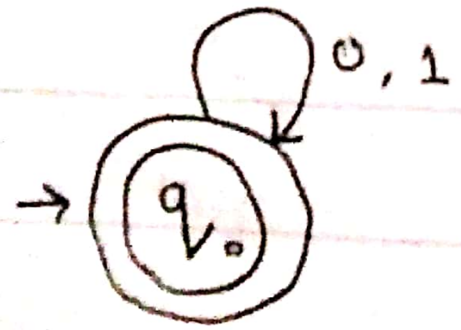
$R = (010 + 011)^* \, (00 + 01)$

$R = 00(0)^* \, 01$

$\boxed{01001} \rightarrow$ accept state

$L = \{0, 1\}^*$, $R.E = (0+1)^*$

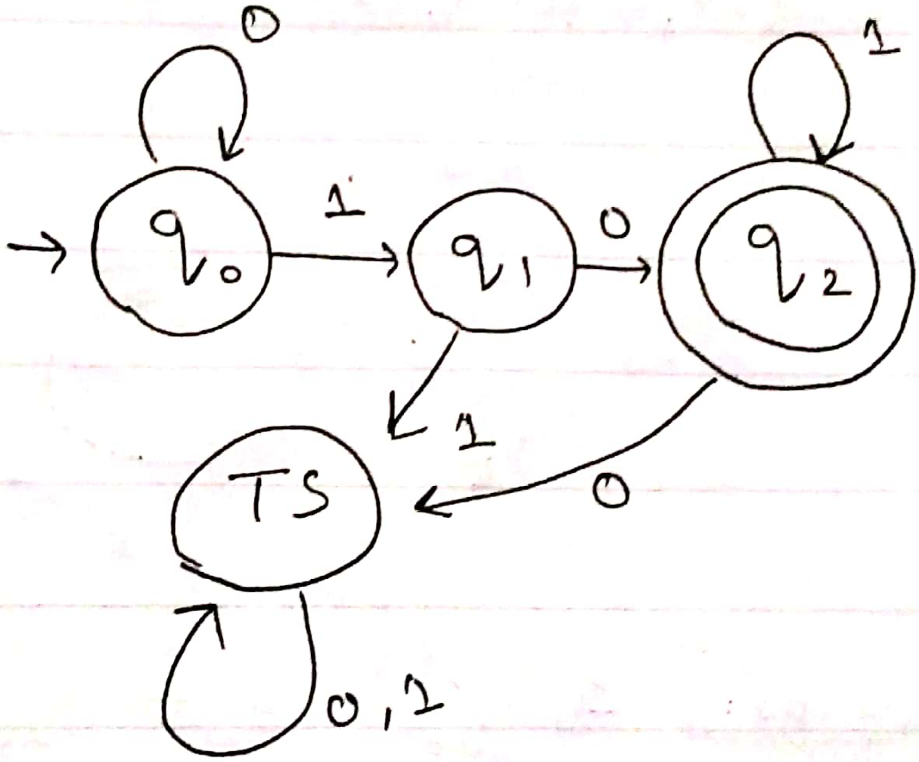
$L = \{\lambda, 0, 1, 01, 001, 011, 0011, \ldots\}$

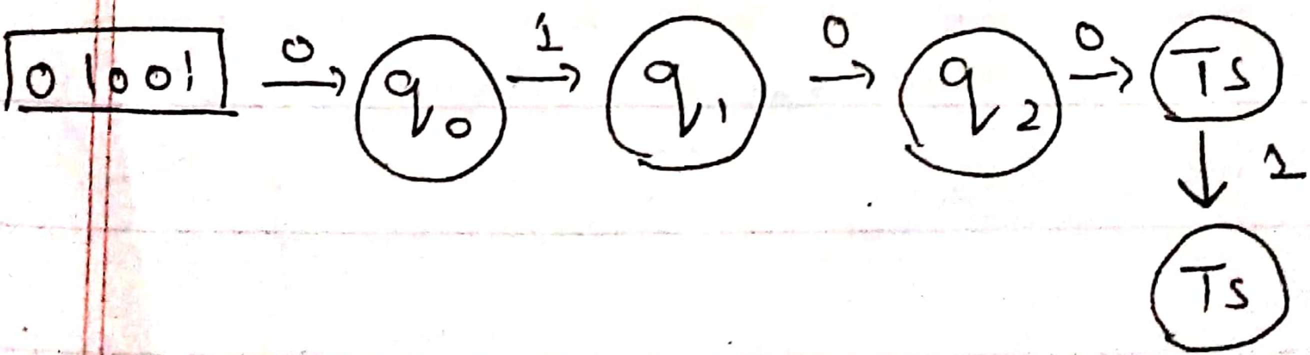


$0 \rightarrow q_0 \xrightarrow{1} q_0 \xrightarrow{0} q_0 \xrightarrow{0} q_0 \xrightarrow{1} q_0$, accepted

b. $L = \{0\}^*\{10\}\{1\}^*$, $R.E = (0)^*\, 10\, (1)^*$

$L = \{10, 010, 101, 0101, 00,1011, \ldots\}$



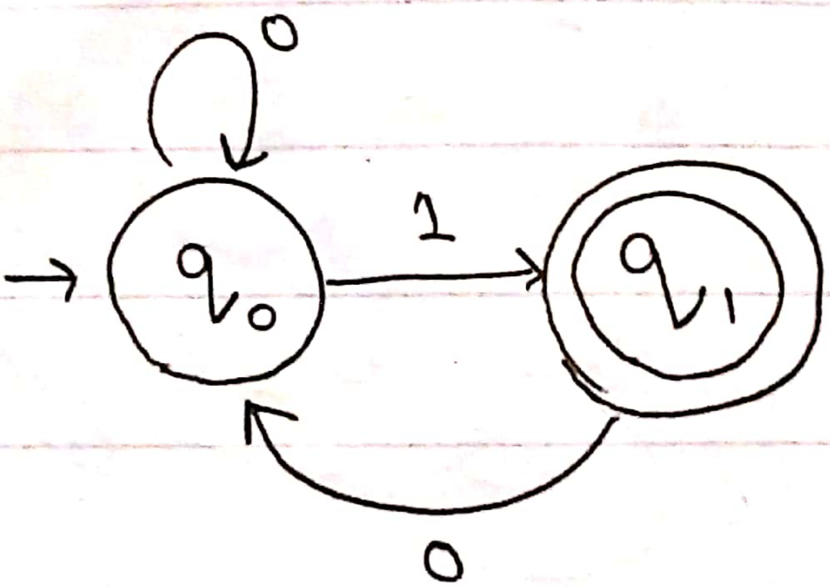


→ Model does not accept 01001

$L = \{010\}^* \{0\}^* \{1\}$

$R.E = (010)^* (0)^* 1$

$L = \{1, 0101, 01, 01001, 0100101, \ldots\}$



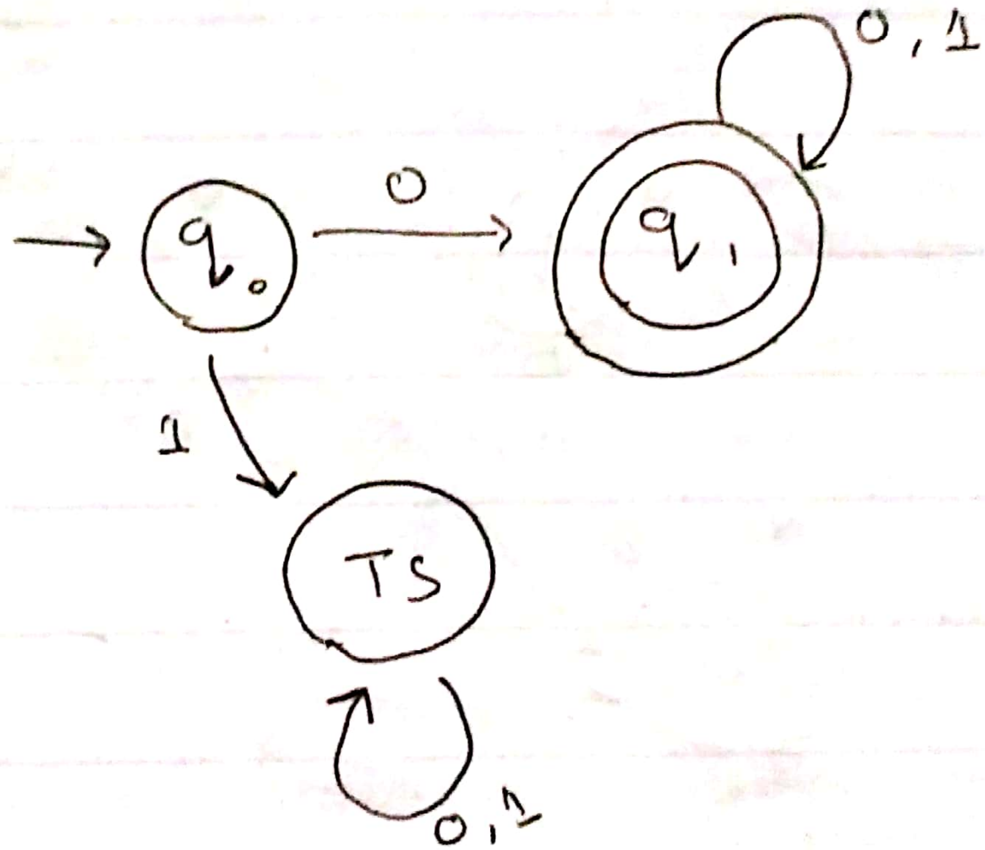
$\boxed{01001}\ \xrightarrow{0} q_0 \xrightarrow{1} q_1 \xrightarrow{0} q_0 \xrightarrow{0} q_0 \xrightarrow{1} q_1$

→ Model accept 01001

d. $L = \{010, 011\}^* \{00, 01\}$

$R.E = (010 + 011)^* (00 + 01)$

$L = \{00, 01, 01000, 01100, 01001, 01101, \ldots\}$



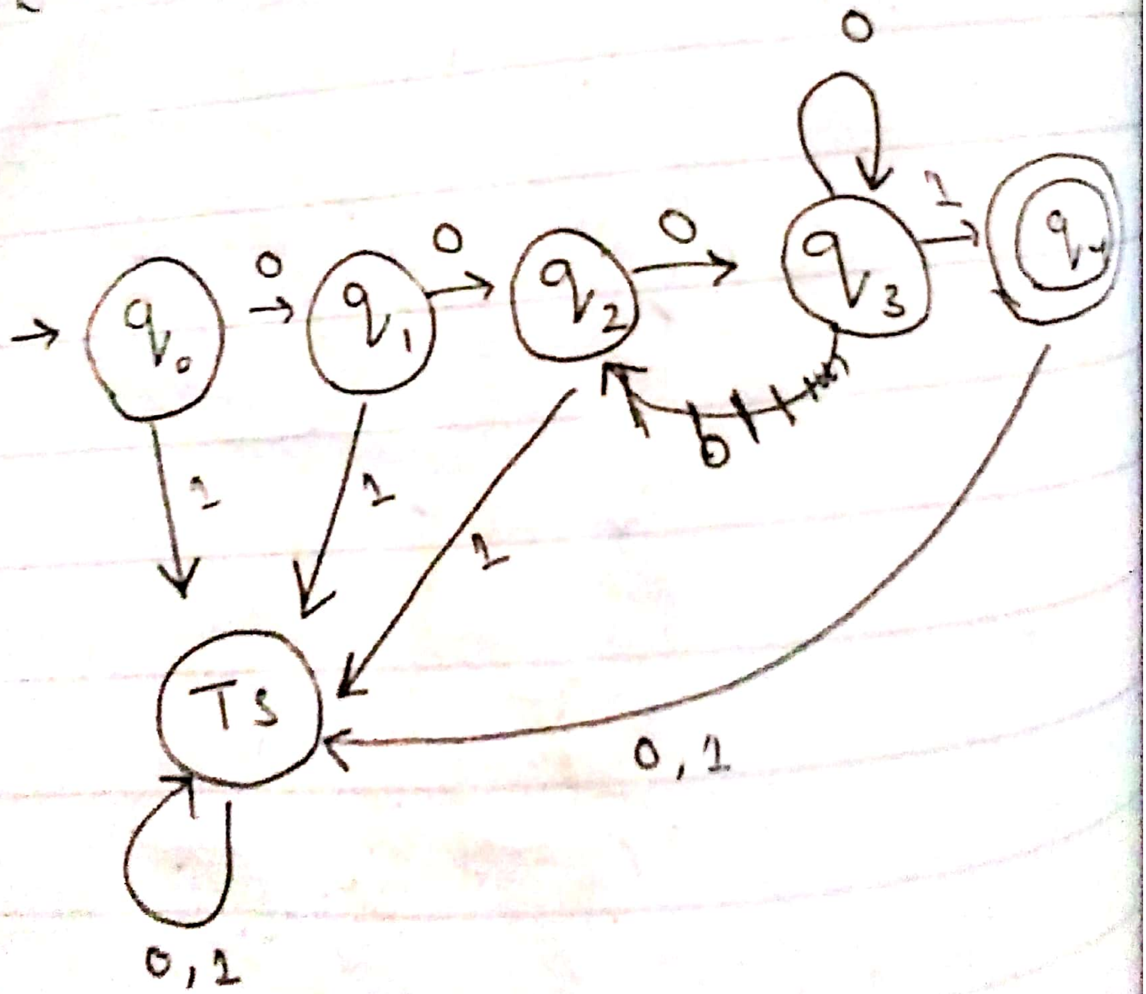
$\boxed{01001} \xrightarrow{0} q_0 \xrightarrow{1} q_1 \xrightarrow{0} q_1 \xrightarrow{0} q_1 \xrightarrow{1} q_1$

→ Model accept 01001

e. $L = \{00\}\{0\}^*\{01\}$

R.E = $00(0)^*01$

$L = \{0001, 00001, 000001, \ldots\}$



$\boxed{01001}$ $\xrightarrow{0} q_1 \xrightarrow{1} TS \xrightarrow{0} TS \xrightarrow{0} TS$ $\downarrow$ TS

→ Model does'nt accept

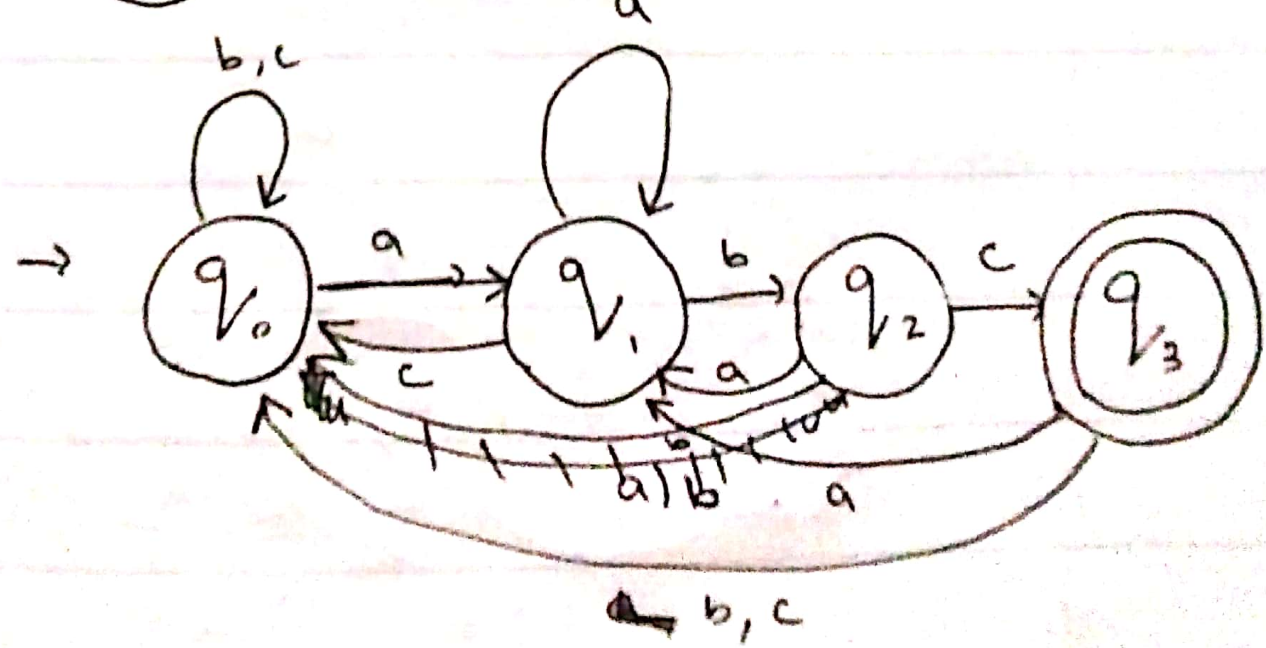
$\boxed{01001}$

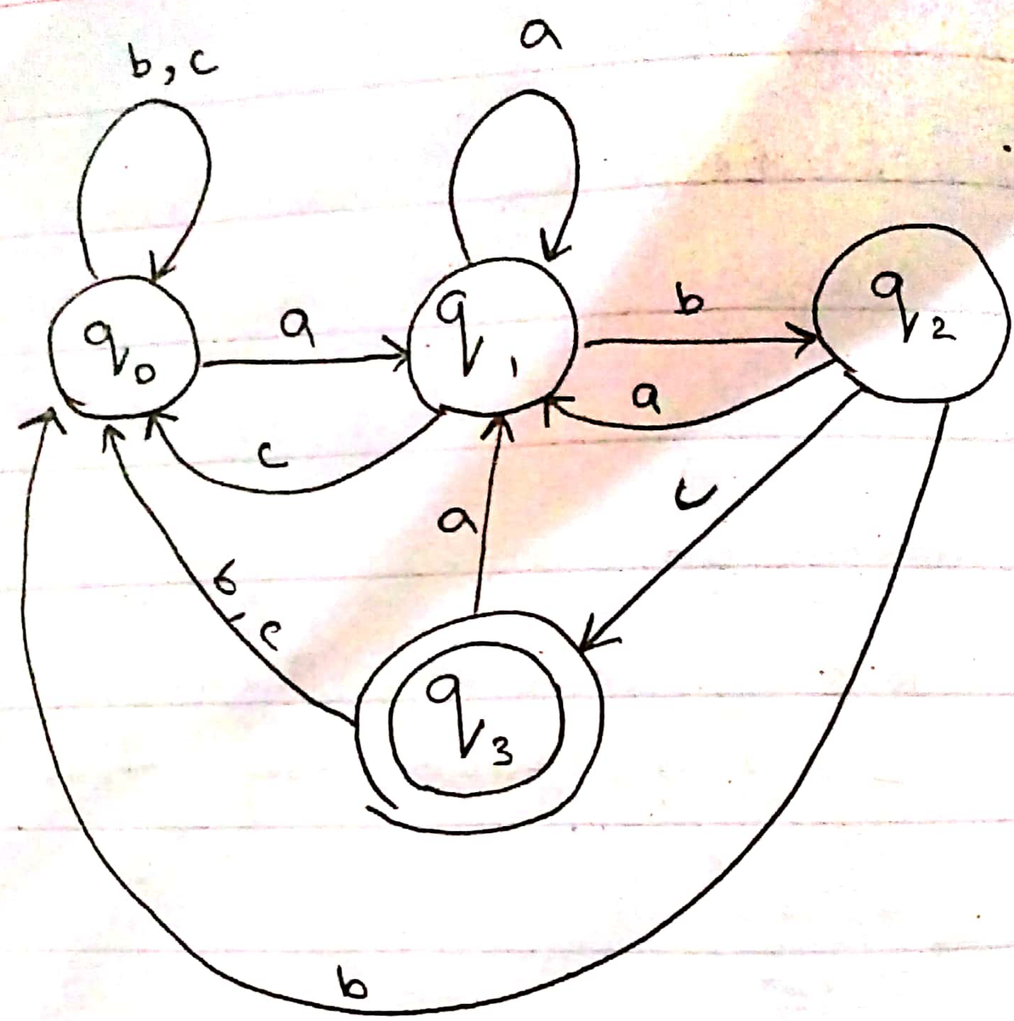
Q4. $\Sigma : \{a, b, c\}$, not ending on "abc".

(1) ending on abc :

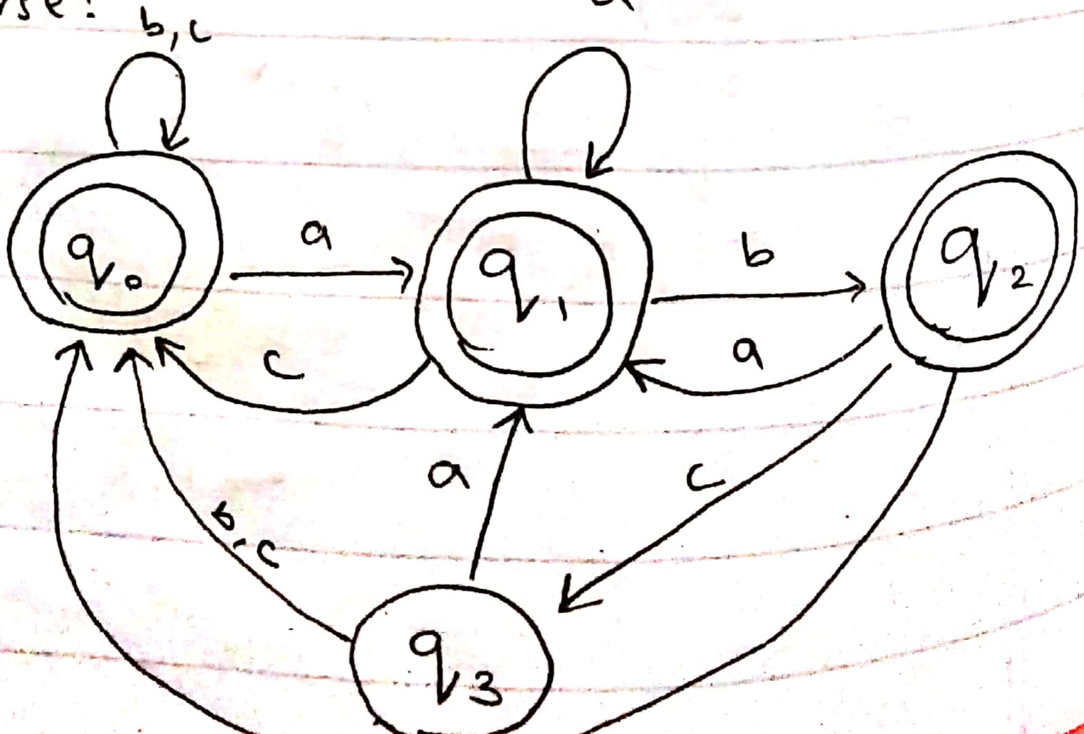
R.E : $(a + b + c)^* (abc)$

L = { abc, aabc, ~~abbc~~ babc, ~~abcc~~ cabc, ~~aabbcc~~ ababc, ... }



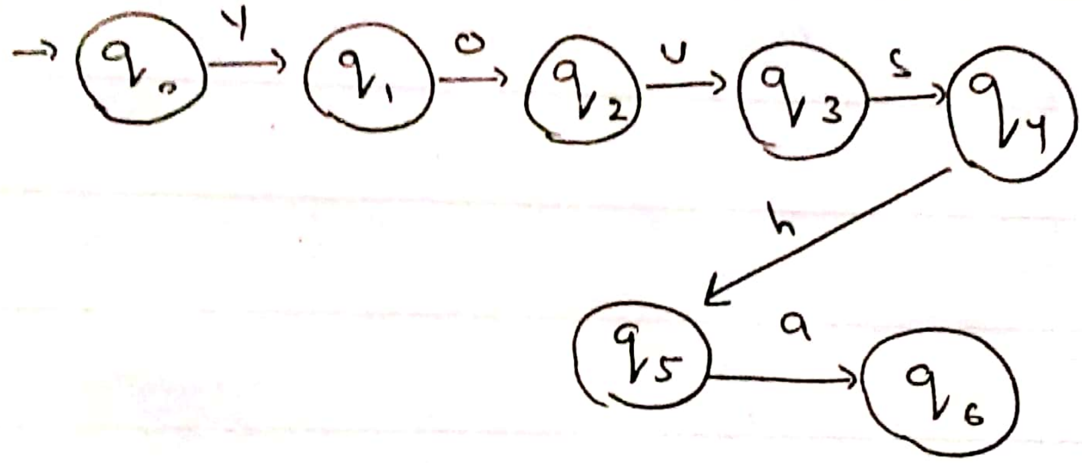


Reverse!



Q5.

NFA: Yousha



DFA: