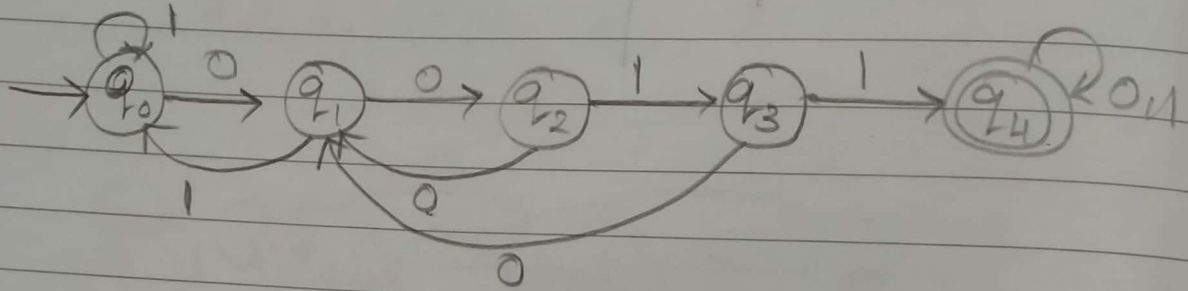


Q-1 Let T be the language represented by the regular expression $\Sigma^* 0011 \Sigma^*$ where $\Sigma = \{0, 1\}$. What is the minimum number of states in a DFA that recognizes L ? Draw DFA for this language.

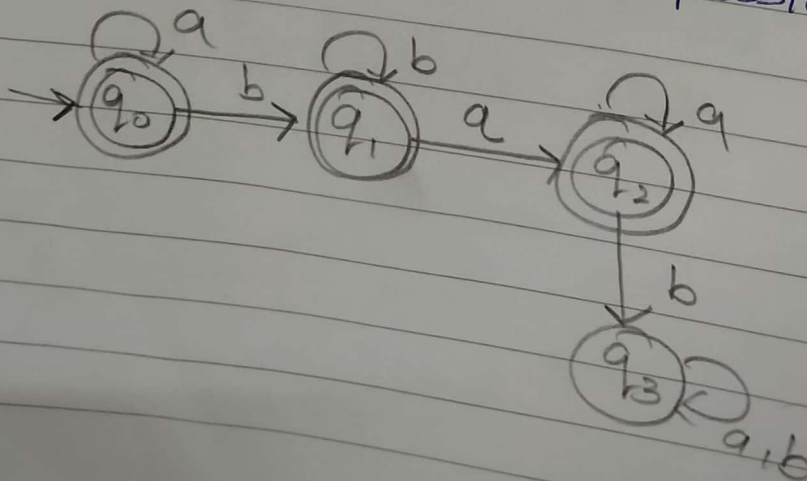
DFA

min
↓
No. of states = 5.

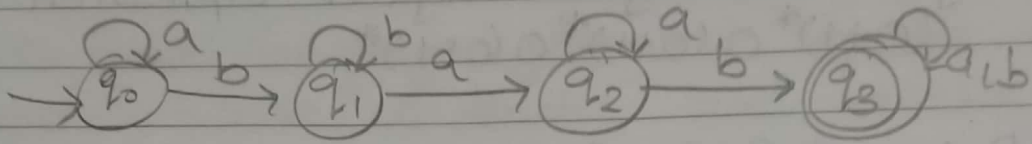
Q-2 The length of the shortest string NOT in the language (over $\Sigma = \{a, b\}$) of the following regular expression is _____

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

⇒ DFA for the above expression is →



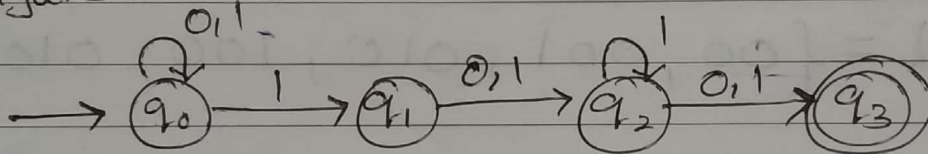
⇒ complemented DFA :-



∴ The shortest string not in the language is.
⇒ ba b

∴ Length = 3

Q-3 Consider the finite automation in the following figure.



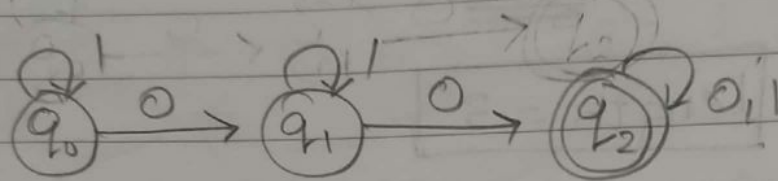
What is the set of reachable states for the input string 0011?

⇒ set of reachable states for the input string 0011 is.

$S = \{q_0, q_1, q_2\}$

Q-4 Describe the languages over the alphabet $\{0,1\}$ is generated by the regular expression $(0+1)^*0(0+1)^*0(0+1)^*$

\Rightarrow Deterministic finite automata for the above expression is given as \rightarrow



$\Rightarrow \therefore$ the language generated by the given expression is.

$L = \{00, 001, 010, 100, 0101, 1010, 1001, 10101, 00000, 01001001, \dots\}$

X