Answer. no-1

i) Here state transition function (f_S)

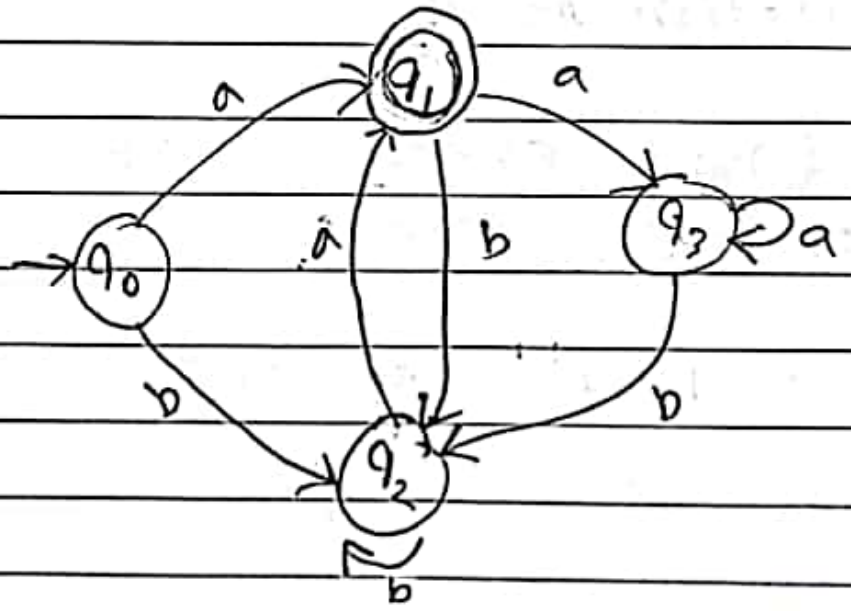
$f_S(q_0, a) = q_1$, $f_S(q_0, b) = q_2$

$f_S(q_1, a) = q_3$, $f_S(q_1, b) = q_2$

$f_S(q_2, a) = q_1$, $f_S(q_2, b) = q_2$

$f_S(q_3, a) = q_3$, $f_S(q_3, b) = q_2$

Required state transition diagram



(ii) To match the password with email addres and check whether all the characters are correct or not DFA can be applied. It determines or justifies whether the password is invalid by matching with the password stored against a particulare email. address. In this way DFA is suitable for verification of email password.

Date :

Question 2

i) Transition table

Σs	a	b
S_0	S_2	S_1
S_1	S_3	S_1
S_2	S_4	S_3
S_3	S_3	S_3
S_4	S_2	S_3

ii) a) w = aaaaaaa

$S_0 \xrightarrow{a} S_2 \xrightarrow{a} S_4 \xrightarrow{a} S_2 \xrightarrow{a} S_4 \xrightarrow{a} S_2 \xrightarrow{a} S_4$

∴ Not accepted by DFA because end with S_4

b) w = ababab

$S_0 \xrightarrow{a} S_2 \xrightarrow{b} S_3 \xrightarrow{a} S_3 \xrightarrow{b} S_3 \xrightarrow{a} S_3 \xrightarrow{b} S_3$

∴ Accepted by DFA because end with final state (S_3).

Date :

Question 3

i) a) List all components

$S = \{S_0, S_1, S_2, S_3, S_4, S_5\}$

$I = \{0, 1\}$

q_0 = Initial state $\{S_0\}$

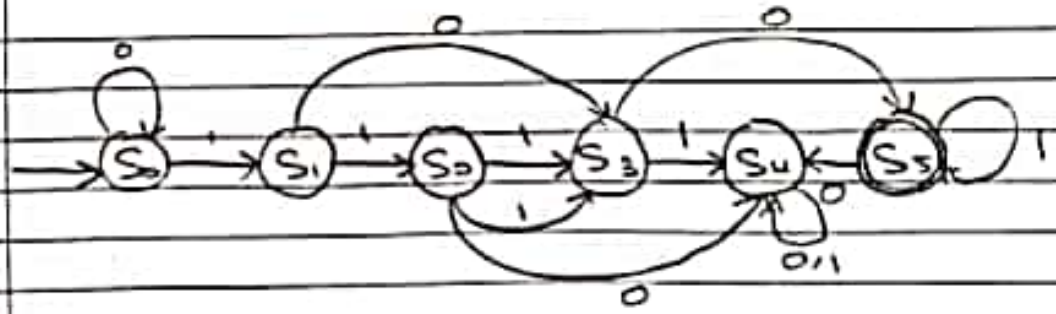
$F = \{S_0, S_1, S_5\}$

b) 00111011100

0 0 1 1 1 0 1 1 0 0

$S_0 \rightarrow S_0 \rightarrow S_0 \rightarrow S_1 \rightarrow S_2 \rightarrow S_3 \rightarrow S_5 \rightarrow S_5 \rightarrow S_5 \rightarrow S_4 \rightarrow S_4$

ii)



Ans. no-4

Here WANDER = A

EVADE = B

ATTACK = C

∴ S = {A, B, C}

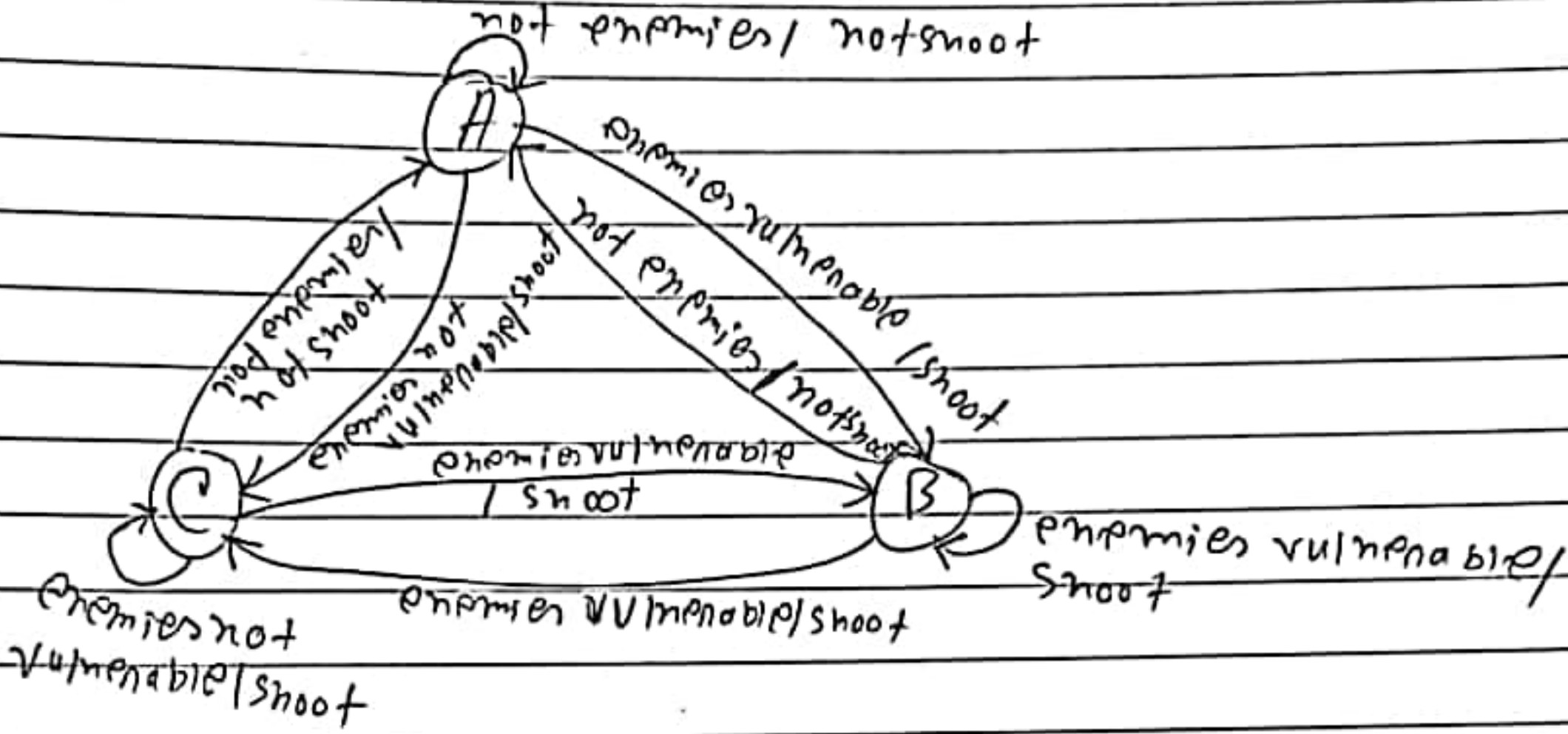
Initial situation be A

Input I = {not enemies, enemies & not vulnerable, enemies & vulnerable}

output O = {shoot, not shoot}

Date

Required finite state diagram



5)