



**UTM**  
UNIVERSITI TEKNOLOGI MALAYSIA

**SCHOOL OF COMPUTING**  
Faculty of Engineering

**Semester 1 2020/2021**

**SUBJECT: DISCRETE STRUCTURE (SECI1013)**

**SECTION: 09**

**ASSIGNMENT 5 : TUTORIAL 5**

**DUE DATE : 10.1.2021**

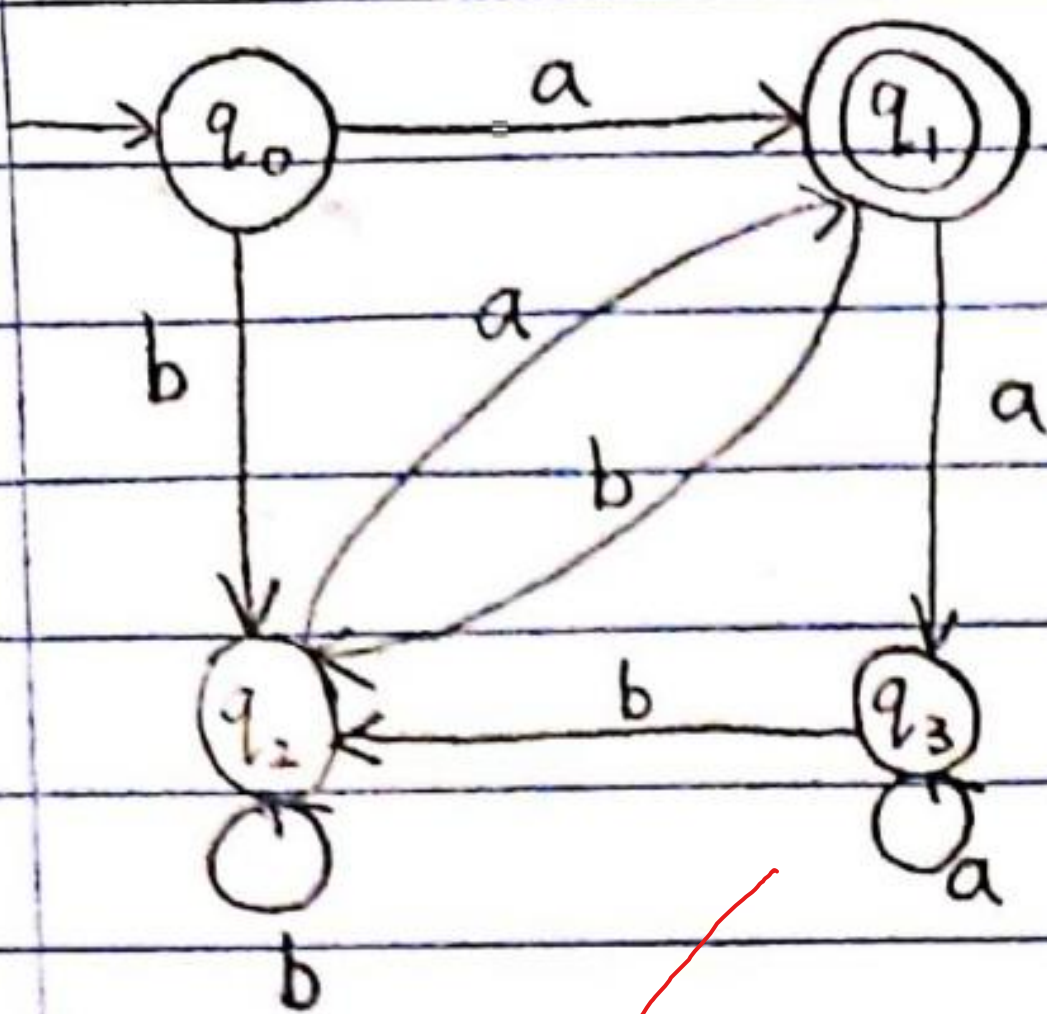
A21h

**GROUP 2:-**

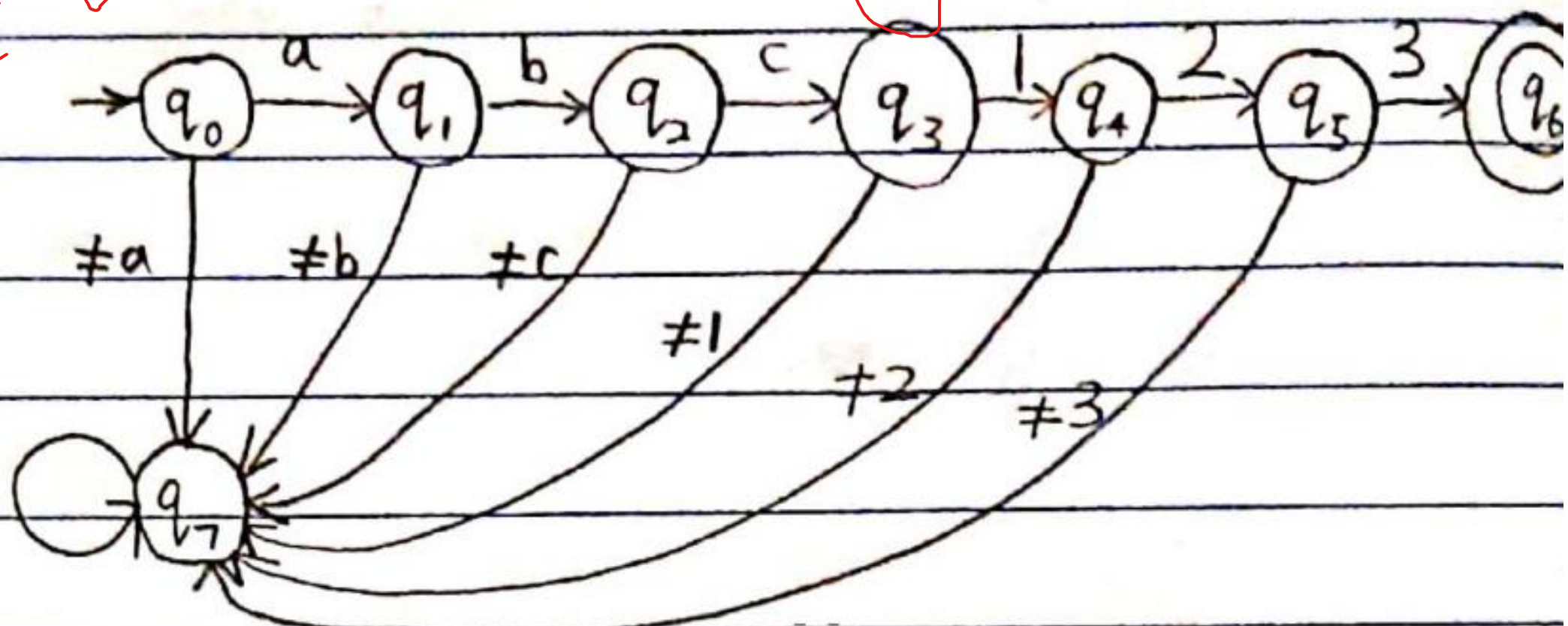
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- II) Arvind (A20EC0016)
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## Question 1

i.



ii. Let say we have email password as "abc123".



Final state =  $\{q_6\}$  and  $q_7$  is a "dead" state, not accepting.

## Question 2

| i. | $f_s$ | 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)  $w = aaaaaa$

$$s_0 \xrightarrow{a} s_2 \xrightarrow{a} s_4 \xrightarrow{a} s_2 \xrightarrow{a} s_4 \xrightarrow{a} s_2 \xrightarrow{a} s_4$$

$\therefore w = aaaaaa$  is not accepted by the DFA.

because  $f_s^*(q_0, w) \notin F$

b)  $w = ababab$

$$s_0 \xrightarrow{a} s_2 \xrightarrow{b} s_3 \xrightarrow{a} s_3 \xrightarrow{b} s_3 \xrightarrow{a} s_3 \xrightarrow{b} s_3$$

$\therefore w = ababab$  is accepted by the DFA

because  $f_s^*(q_0, w) \in F$

## Question 3

i. a)  $S = \{s_0, s_1, s_2, s_3, s_4, s_5\}$

$I = \{0, 1\}$

$q_0 = \{s_0\}$

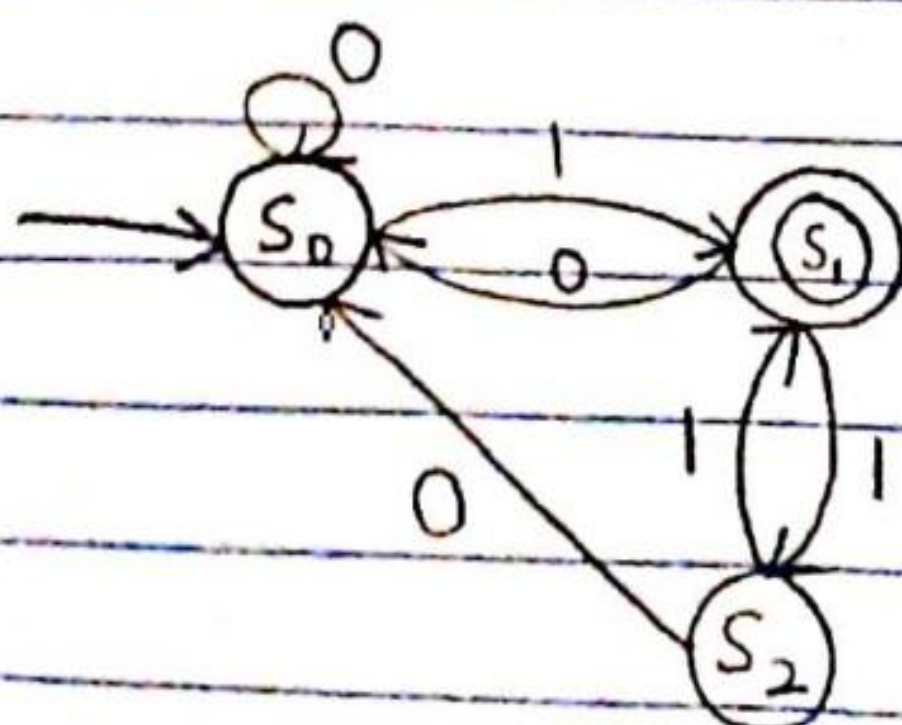
$F = \{s_0, s_1, s_5\}$

b)  $s_0 \xrightarrow{0} s_0 \xrightarrow{0} s_0 \xrightarrow{1} s_1 \xrightarrow{1} s_2 \xrightarrow{1} s_3 \xrightarrow{0} s_5 \xrightarrow{1} s_5 \xrightarrow{1} s_5 \xrightarrow{0} s_4 \xrightarrow{0} s_4$

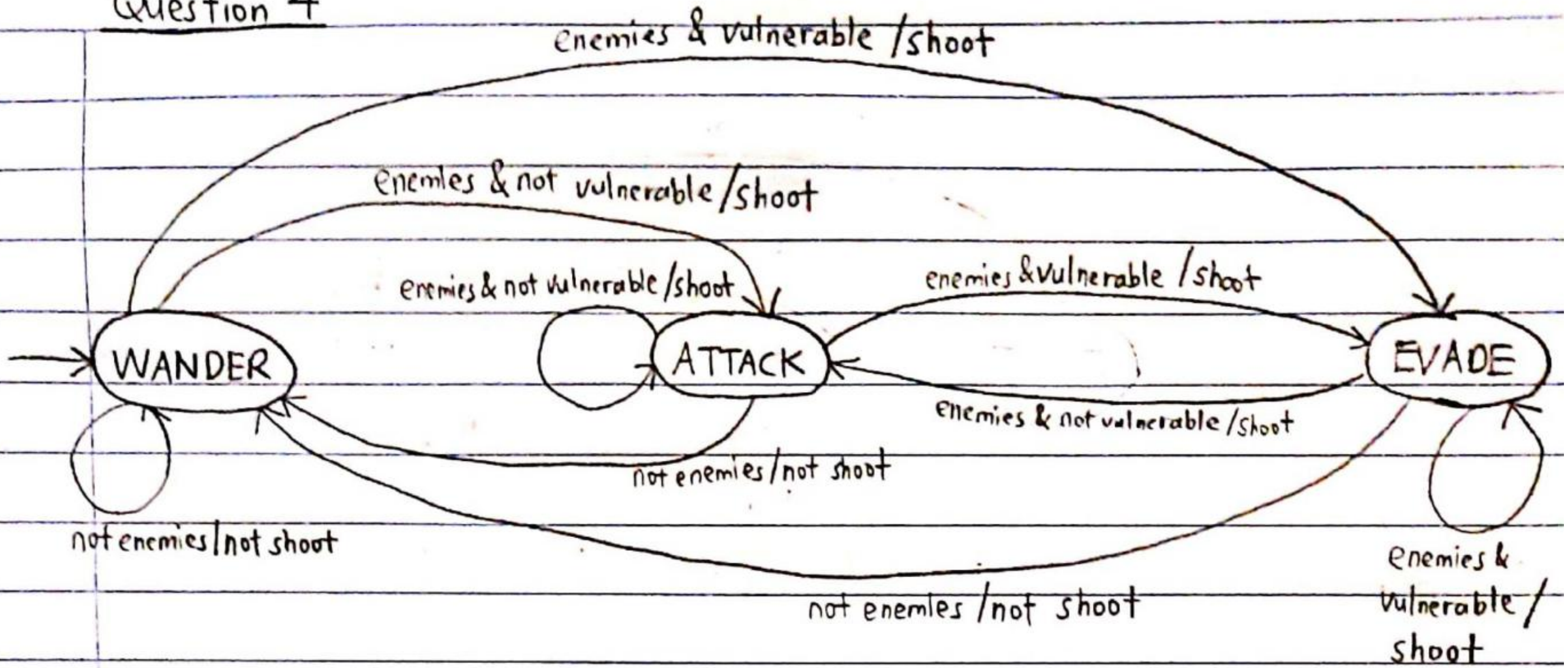
Since  $s_4$  is not the final state,

the string 0011101100 is not accepted by the DFA.

ii.



## Question 4



## Question 5

