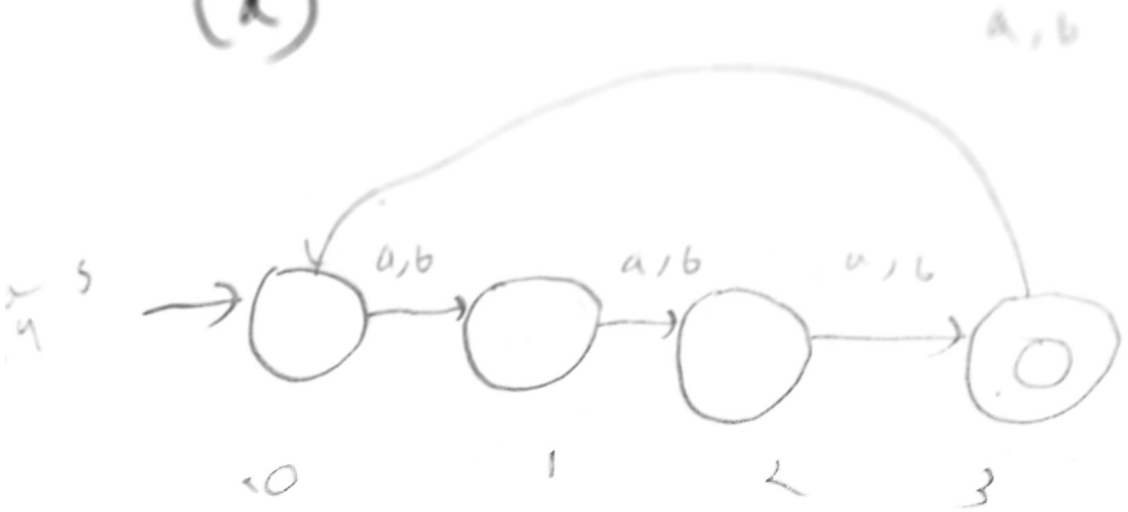
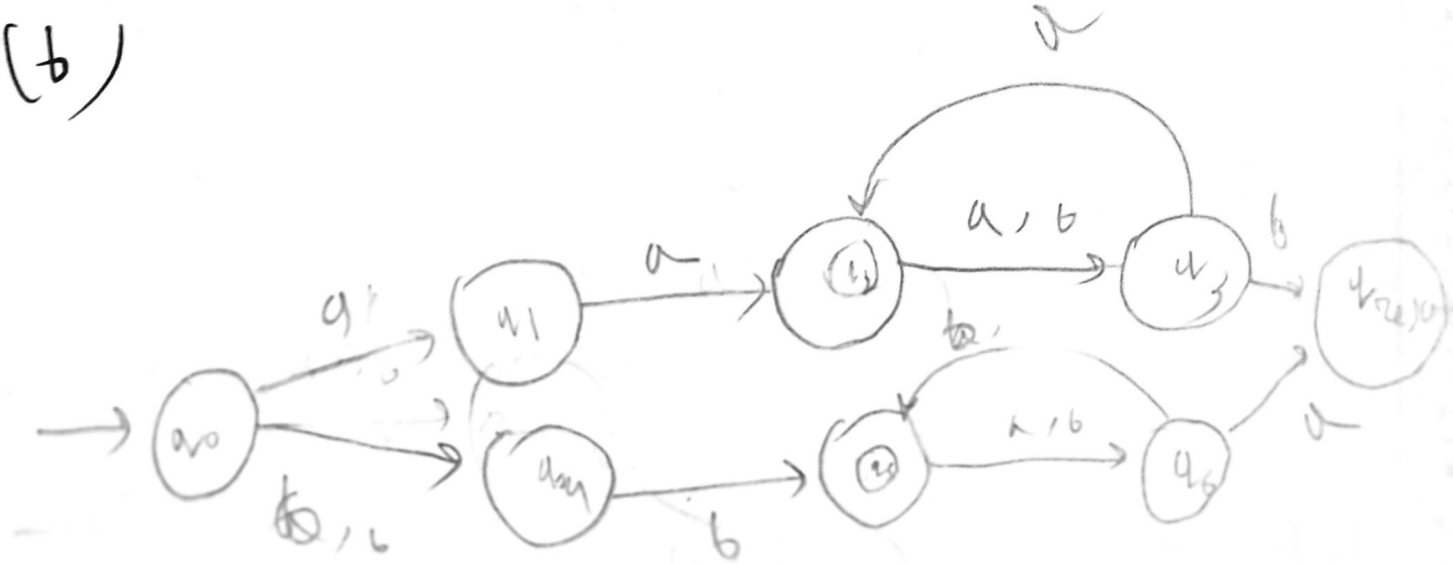
spring 25

DFA

(a)



(b)



(c)

$2K+1 = 2\times 0+1 = 1$

$2\times 1+1 = 3$

$2\times 2+1 = 5$

$2K+1 = 2\times 0+1 = 1$

$2\times 1+1 = 3$

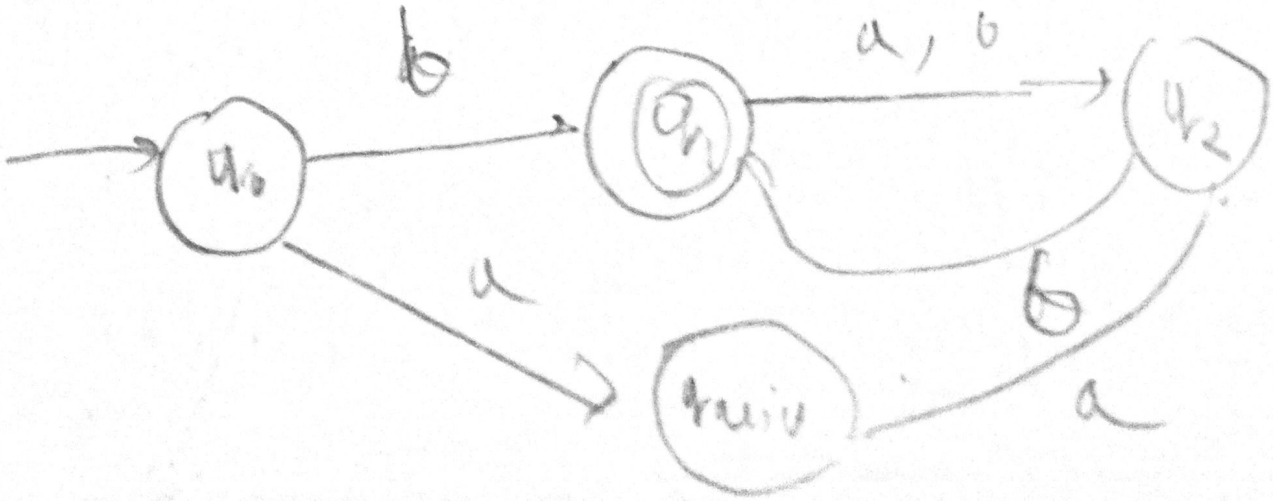
$2\times 2+1 = 5$

(d) $L_2 \cap (L_3 \cup L_4)$

$\cancel{3\times 2\times 2}$ 3×2

$3 + 4 = 7$

$L_4 =$



L_2 = 2 students

L_3 = 2 students

L_4 = 2 students

$L_2 \cap (L_3 \cup L_4)$ = 2 + 2 × 2 = 6 students

TOPIC NAME : _____ DAY : _____ TIME : DATE

(e)

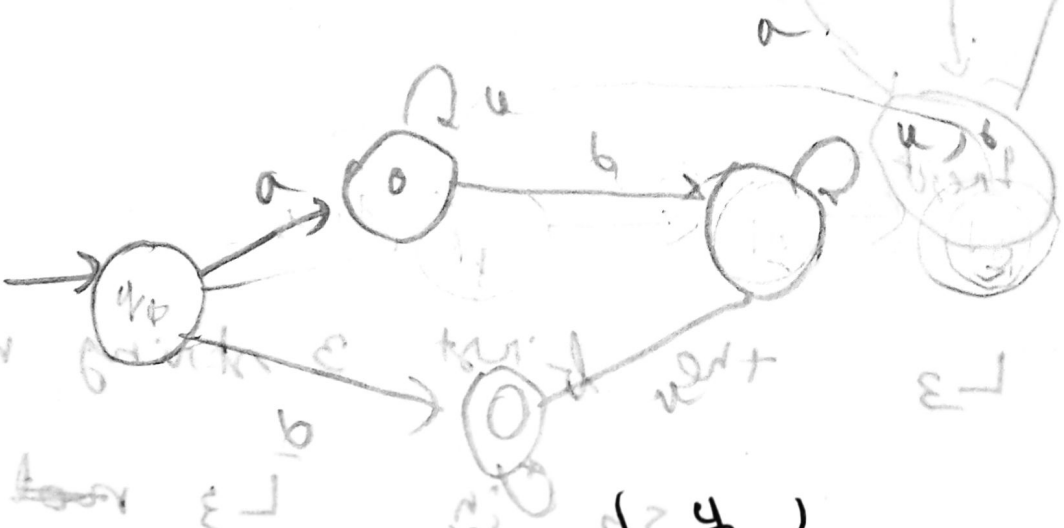
$$\overset{1}{a}\ \overset{2}{a}\ \overset{3}{a}\ \overset{4}{a}$$

TOPIC NAME : DAY : TIME DATE : / /

(e)

a a a a

(f)

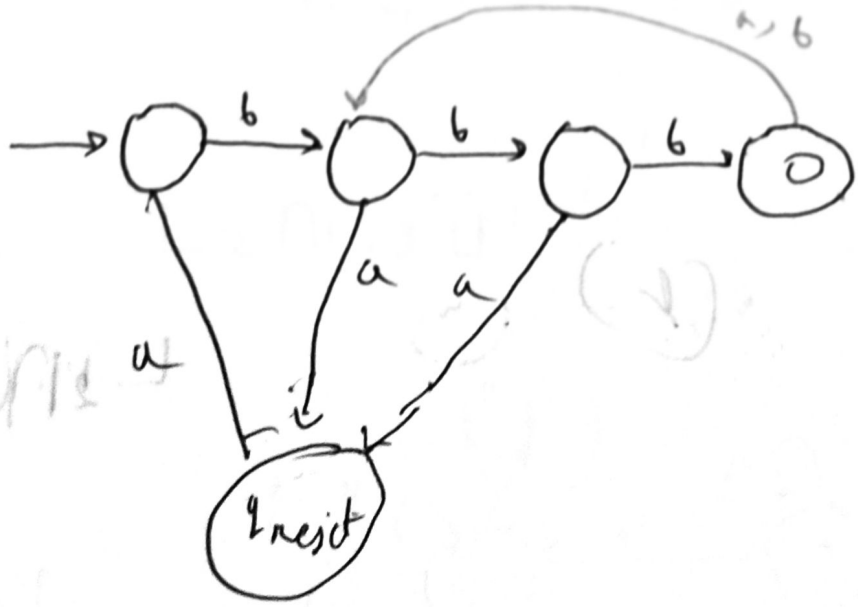


(g)

bbbb

(h)

$\overline{L_3} \circ L_4$ ~~dfa~~ DFA



in L_3 the first 3 string must be a. so in $\overline{L_3}$ ~~not~~ first 3 string can't be a.

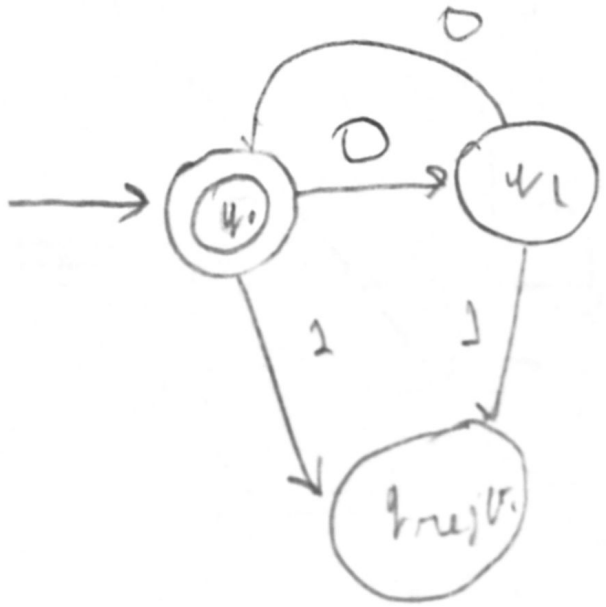
$\therefore L_3 \circ L_4 = \overline{L_3}$ (justification)

TOPIC NAME : DAY : TIME : DATE : / /

Spring 23 set 1

1/(a)

(b)



TOPIC NAME : DAY : TIME : DATE : / /

(c)

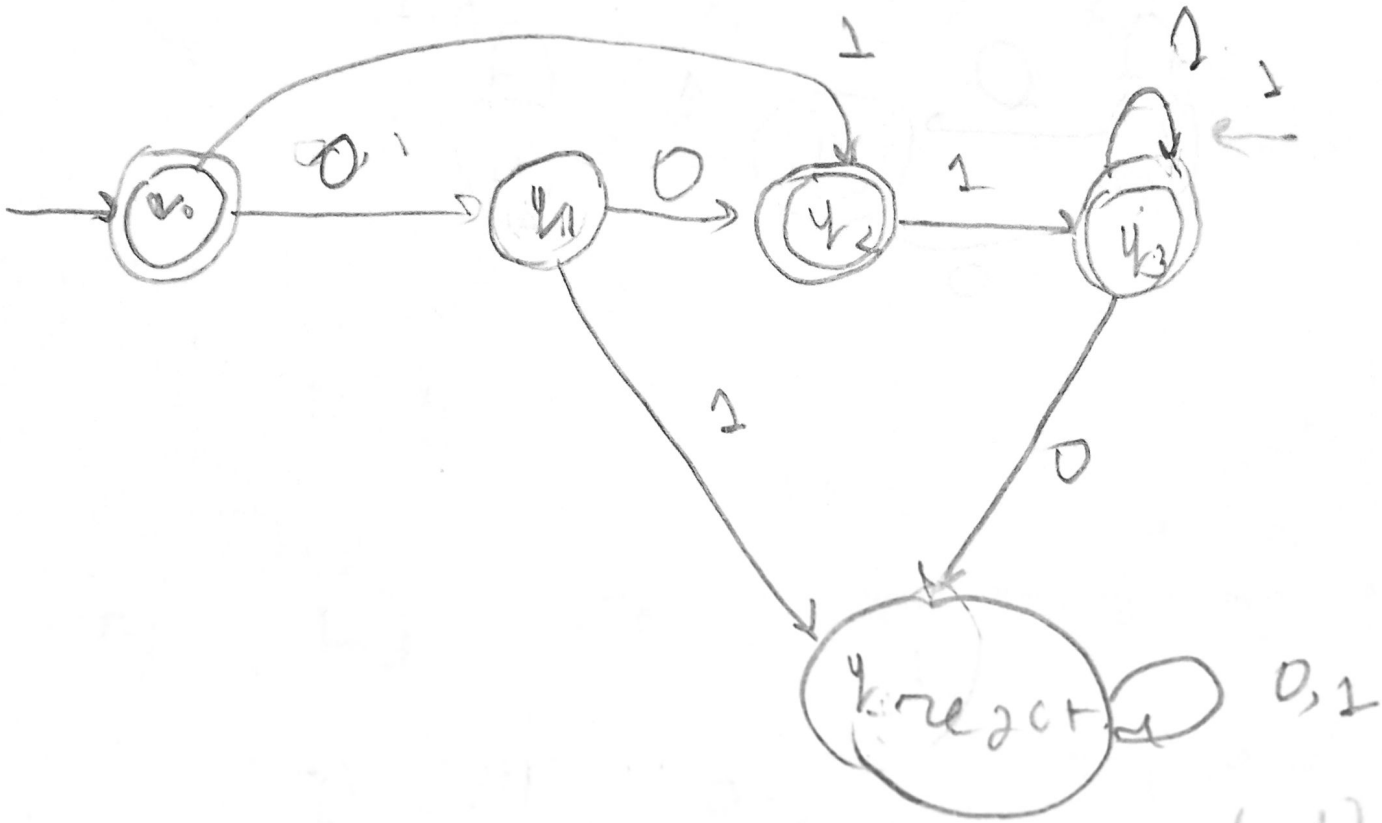
0 0 1 1 1

$L_2 = \{0^m, m \text{ is even}\}$

$L_3 = \{1^n ; n \geq 0\}$

(d)

$L_4 = L_2 \cup L_3$



(d)

TOPIC NAME :

(c)

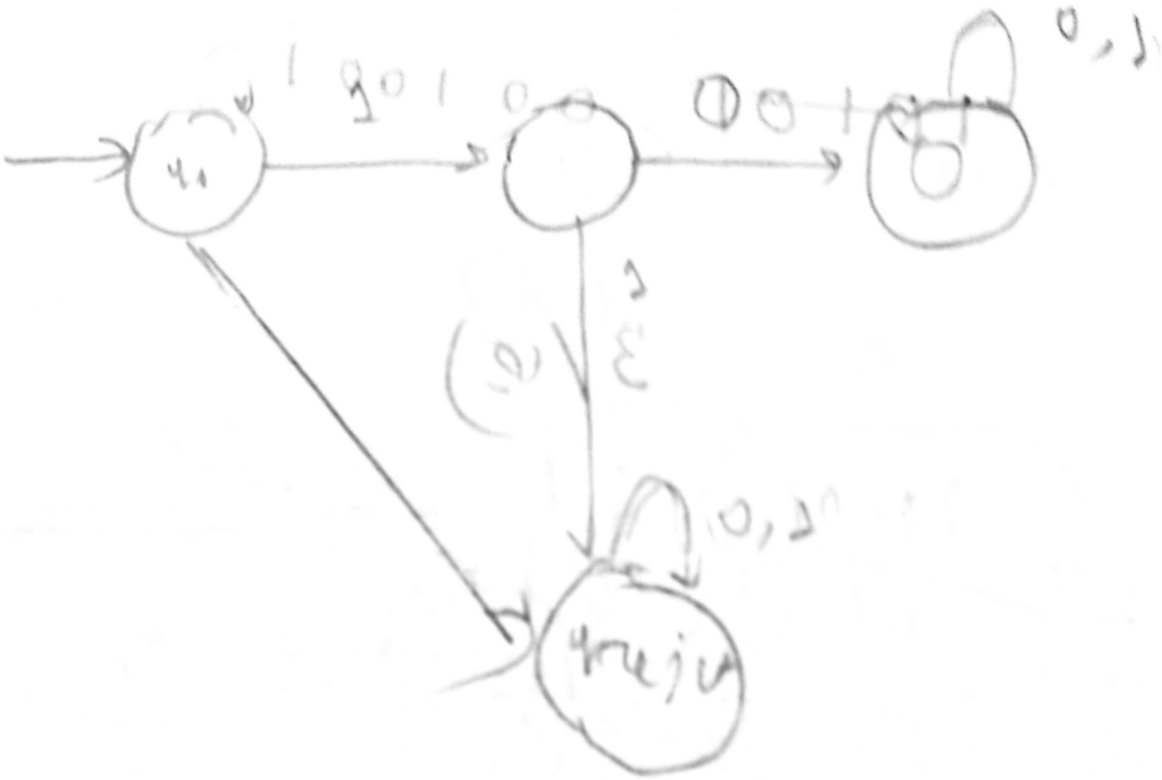
L_1 : 3 states (q_0, q_1, q_2)

L_2 = 4 " (q_0, q_1, q_2, q_3)

$4 \times 3 = 12$

(b) 11111

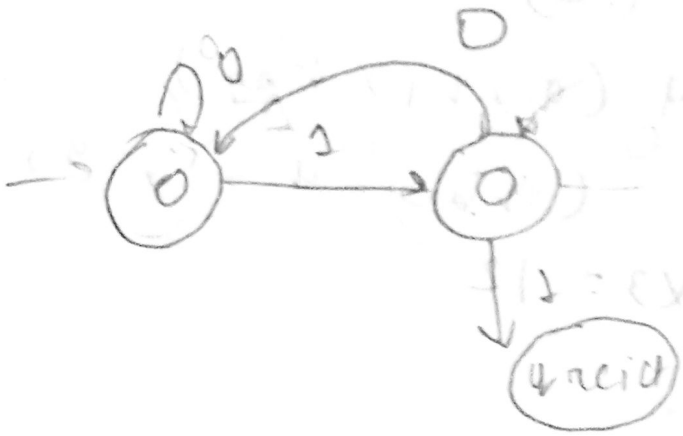
3/(a)



001001

TOPIC NAME: DAY: TIME: DATE: / /

3/(b)



3/(c)

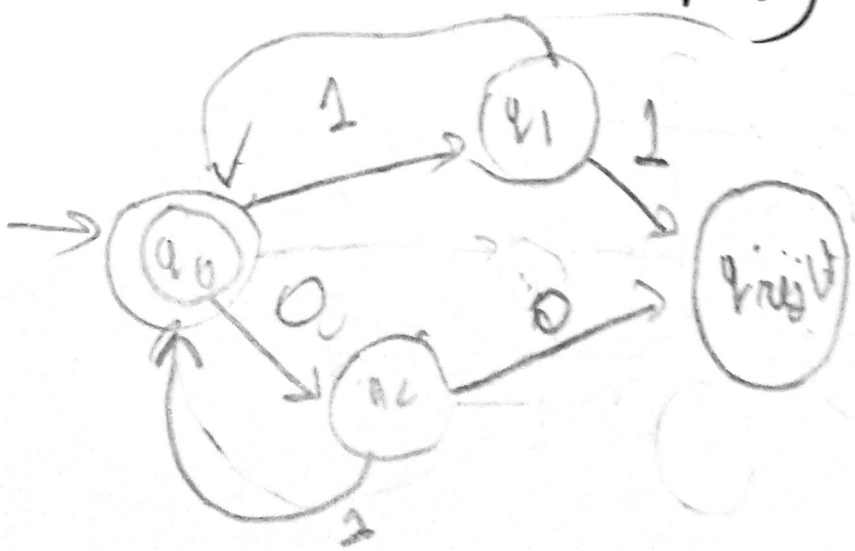
~~4 L1 = 4 start (q0~~ L3, L2 = 3 states

3 4x3 = ~~12~~ 9

3/(d)

~~10101~~ 001001

3/(e)

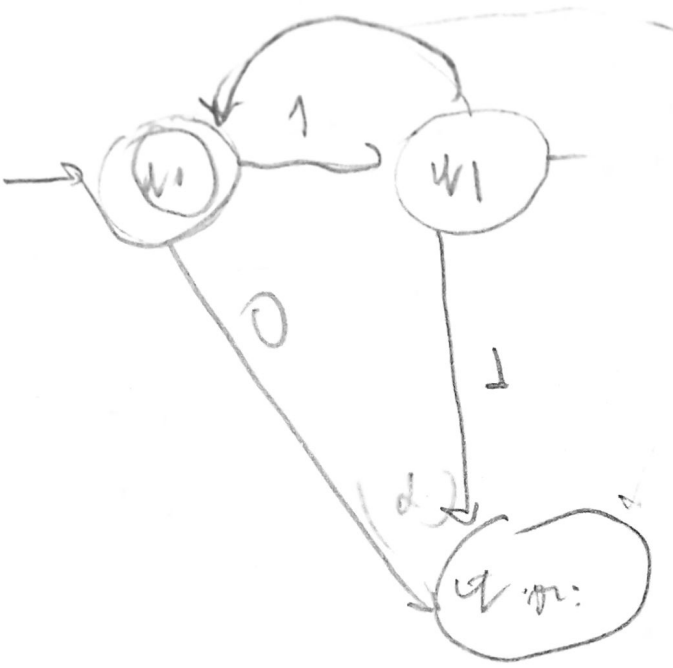


TOPIC NAME : DAY : TIME : DATE / /

(f)

101010

(g)



(h)

~~L_4^* cont~~ No,

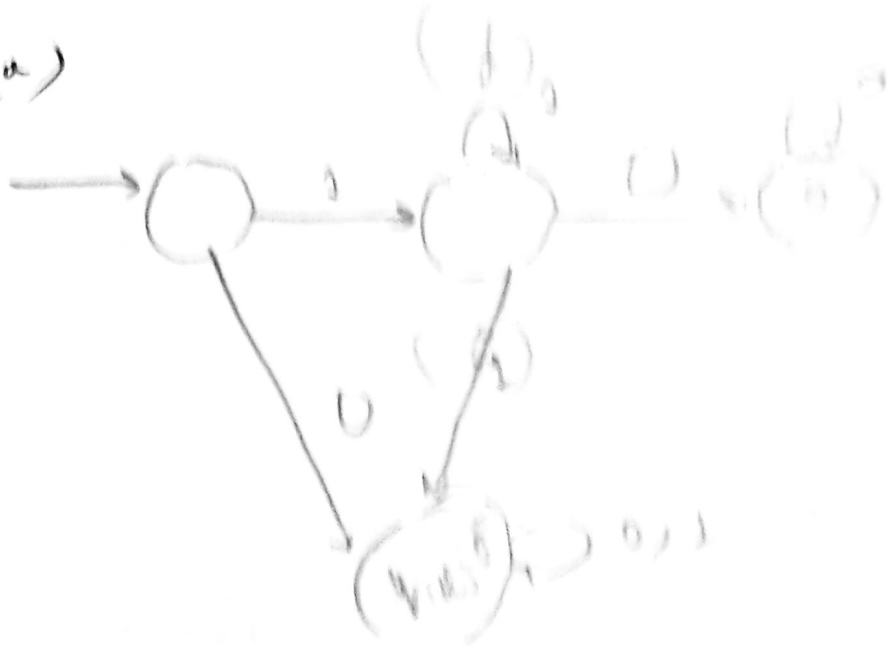
$(L_4)^*$ contain ϵ, L_1 require to start.

it 10 means L_1 and then

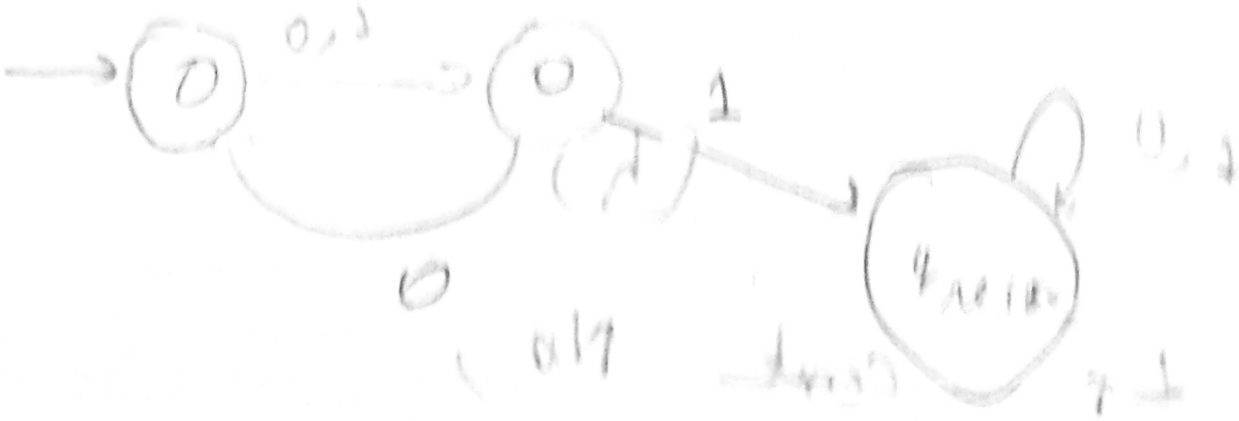
$L_1 \cap L_5 \notin (L_4)^*$

4

(a)



(b)



(c)

3 — x — 2

$L_1 = 4$ state

$L_2 = 3$ state

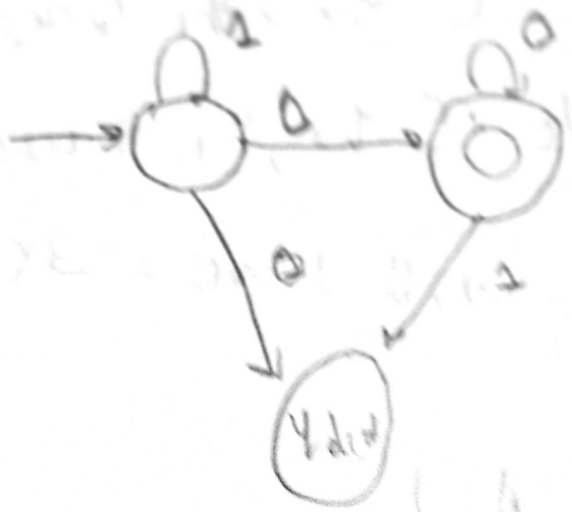
$= 4 \times 3 = 12$ state

(d)

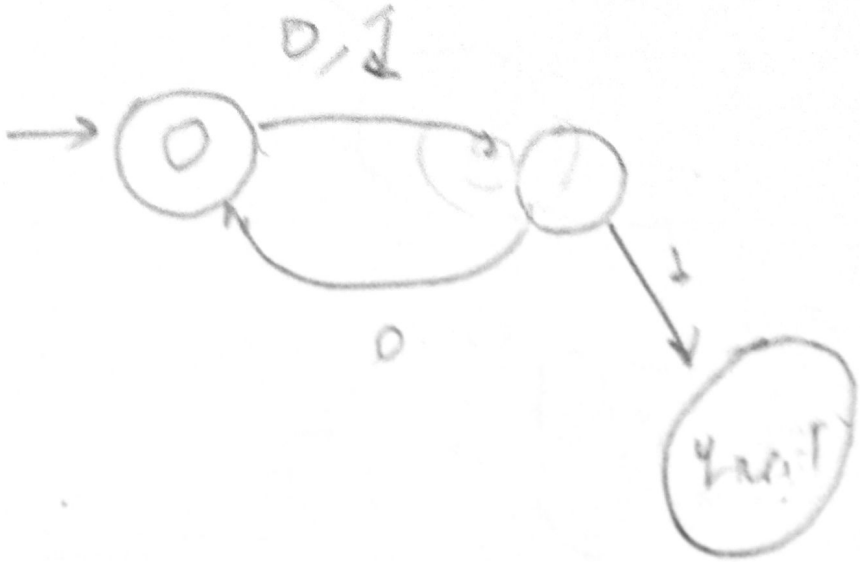
10000

TOPIC NAME : TIME DATE :

4 / (a)



4(b)



TOPIC NAME : DAY : TIME : DATE : / /

(c)

L_1 = 3 state (q_0, q_1 q_{reject})

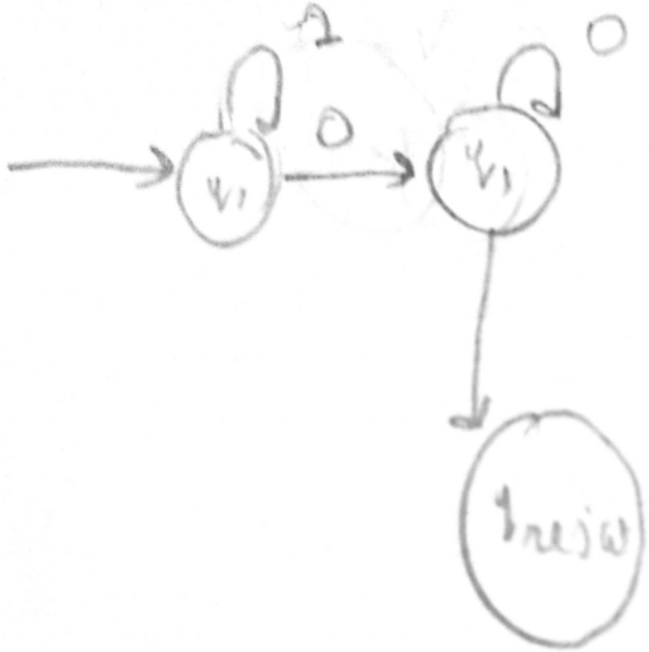
L_2 = 3 state (q_0, q_1 q_{reject})

∴ state will have = 3 × 3 = 9

d)

1000

(e)



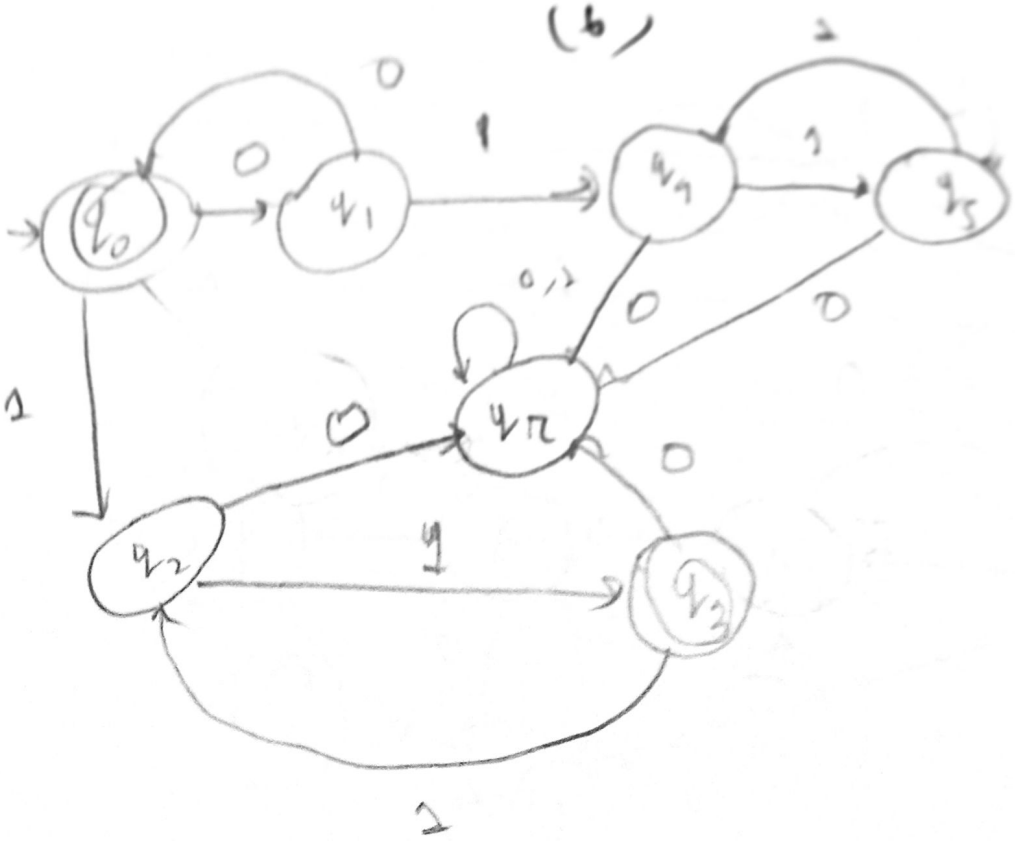
spring 2 Q ~~sol~~

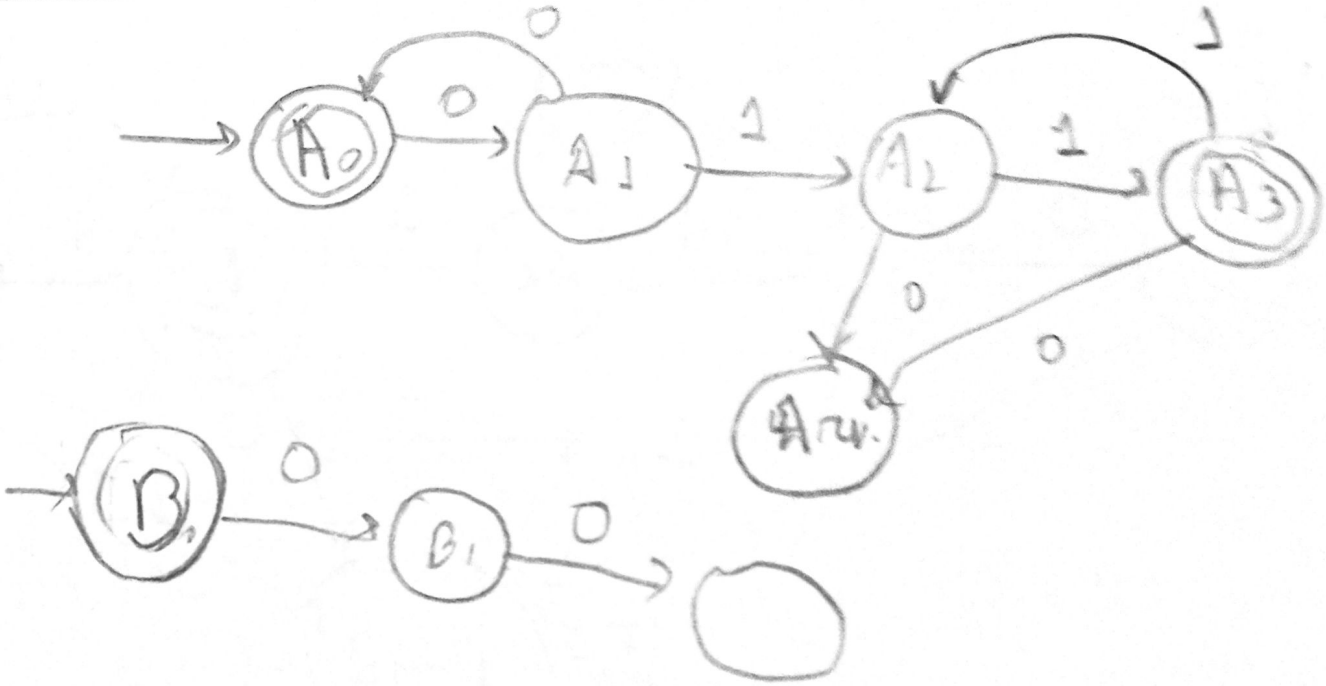
(a) 0011111
0000011 } both even

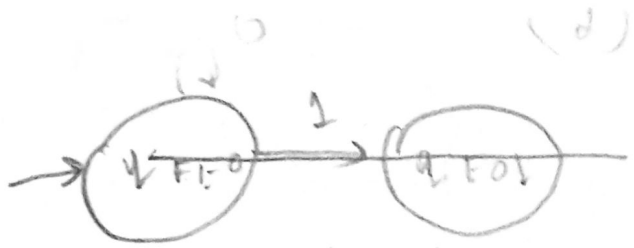
0001111
0111111 } both odd.

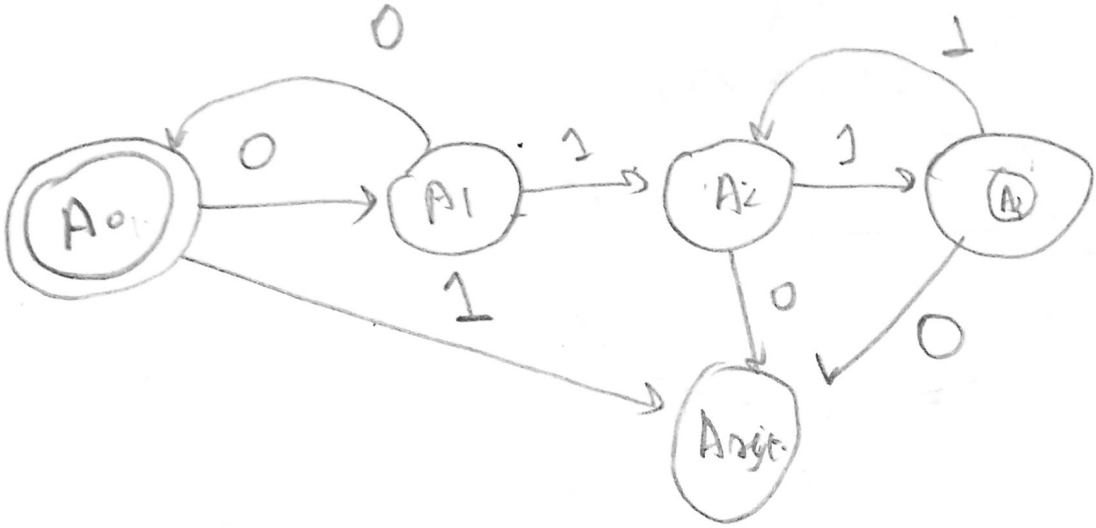
TOPIC NAME : DAY TIME DATE / /

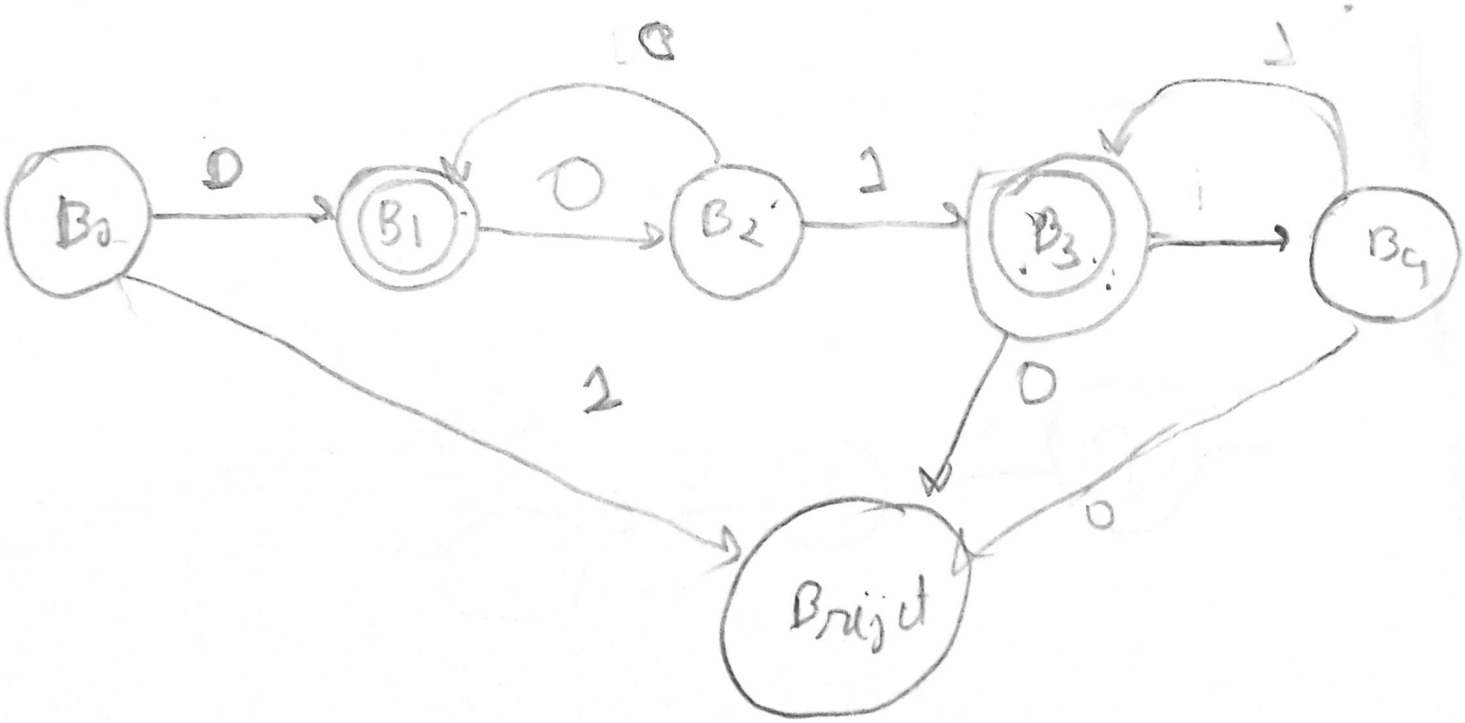
(b)






1


0
0
1
1
1
0
0
A0
A1
A2
A3
A3rejt


0
0
1
1
0
1
0
B0
B1
B2
B3
B4
Brejt

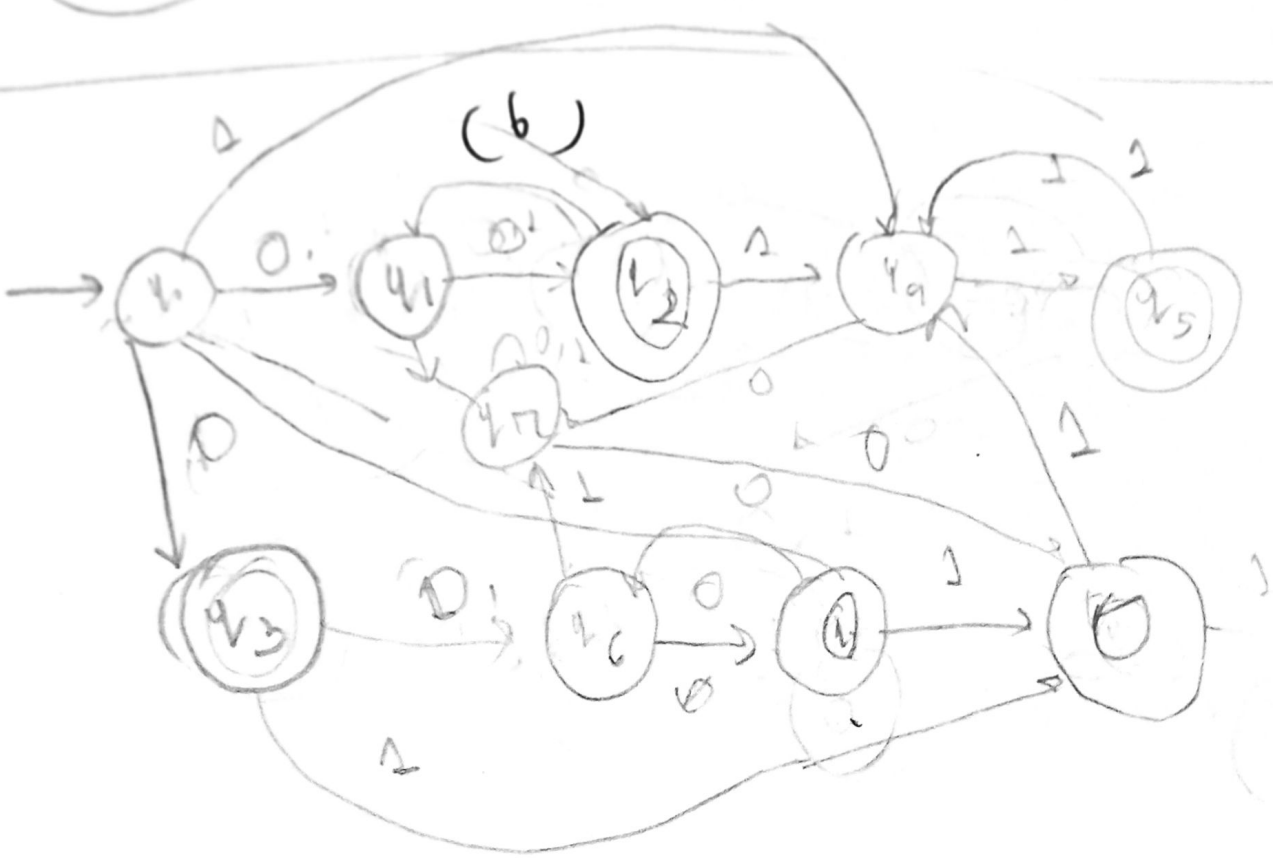
TOPIC NAME : DAY : TIME : DATE : / /

00 11

0000 1111.

A∘B∘

(b)



(c)

6 states.

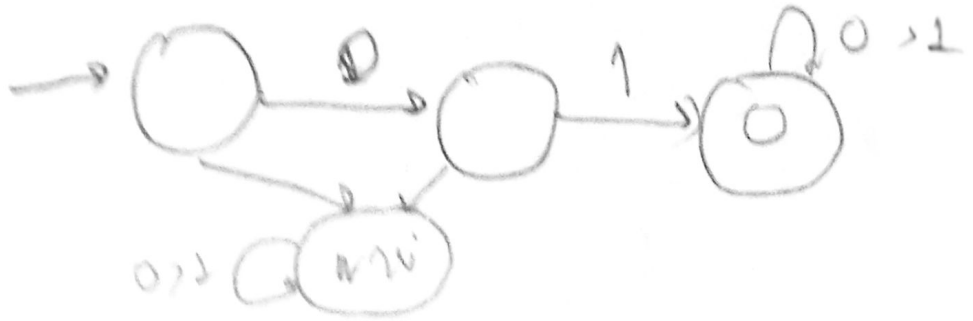
(d)

TOPIC NAME : DAY : TIME : DATE : / /

~~spring 29 set 1~~

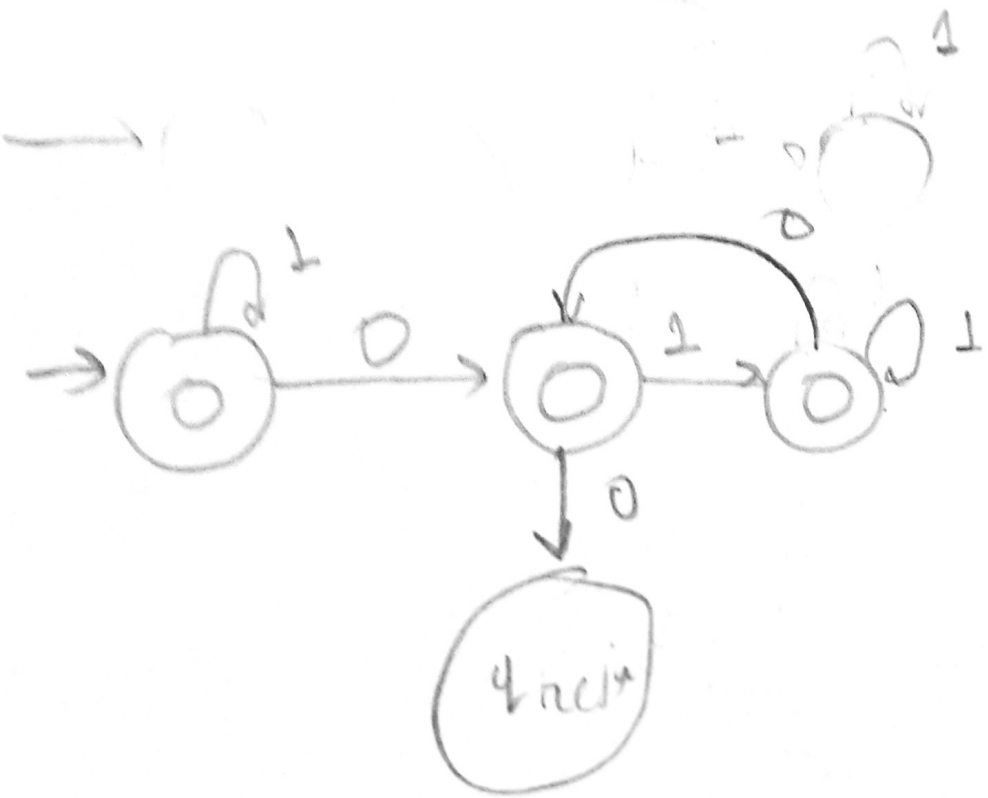
Spring 29 set 1

(a)



(b)

00
01
11
10



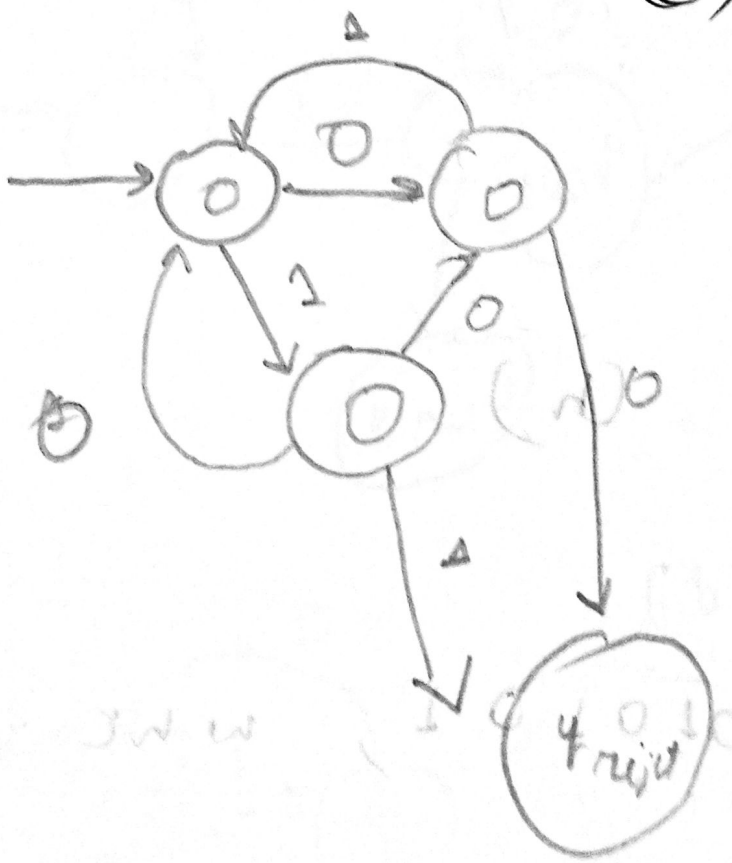
(c)

4 x 4 = 16 state

(d)

0.101.01

(e)

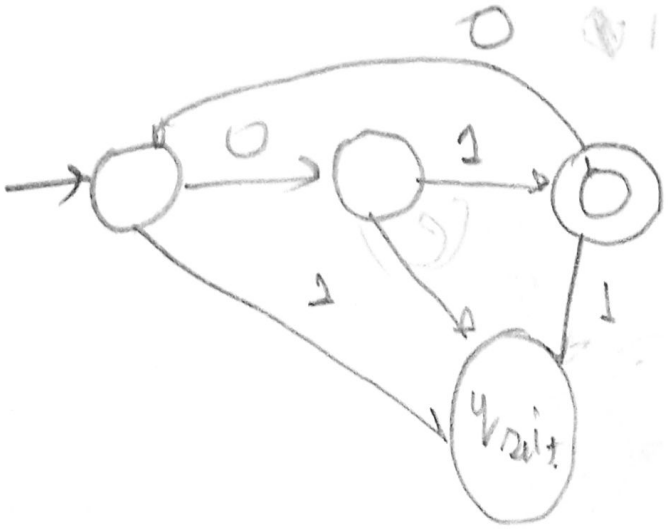


TOPIC NAME : DAY : TIME : DATE : / /

(f)

010101

(g)



(h)

Yes.,

(L_4) : 010101, which starts with 01 $(L_4 \in L_1)$

doesn't contain 00 $(L_4 \in L_2)$

doesn't " 11 $(L_4 \in L_3)$

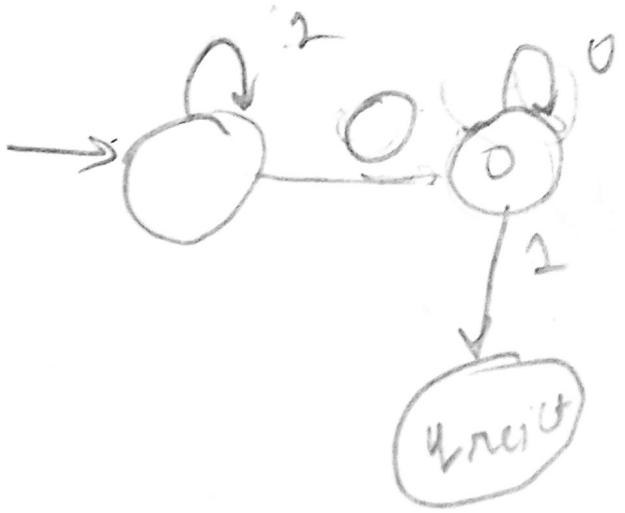
TOPIC NAME : TIME : DATE :

$\therefore (L_a)^*$ and $L_1 \cap L_2 \cap L_3$ ~~etc.~~

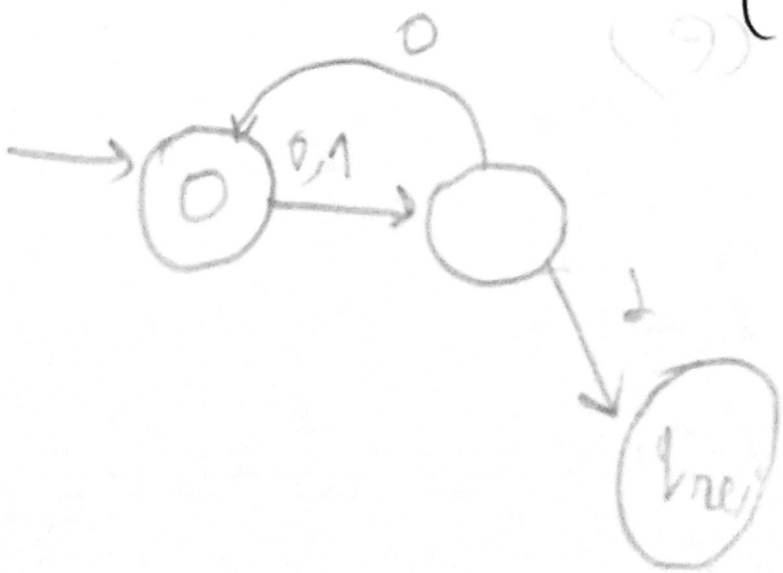
~~Total~~ are same.

<u>spring 29 set 2</u>

(a)



(b)



TOPIC NAME : DAY : TIME : DATE : / /

(c)

$3 \times 3 = 9$

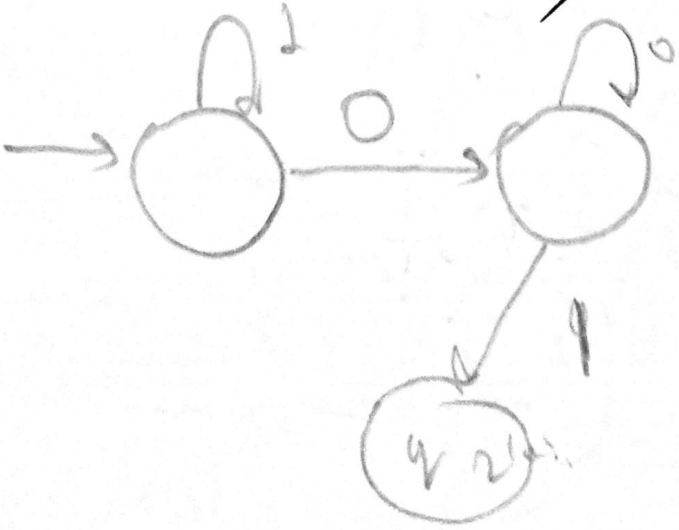
(e)

(d)

1000

0000

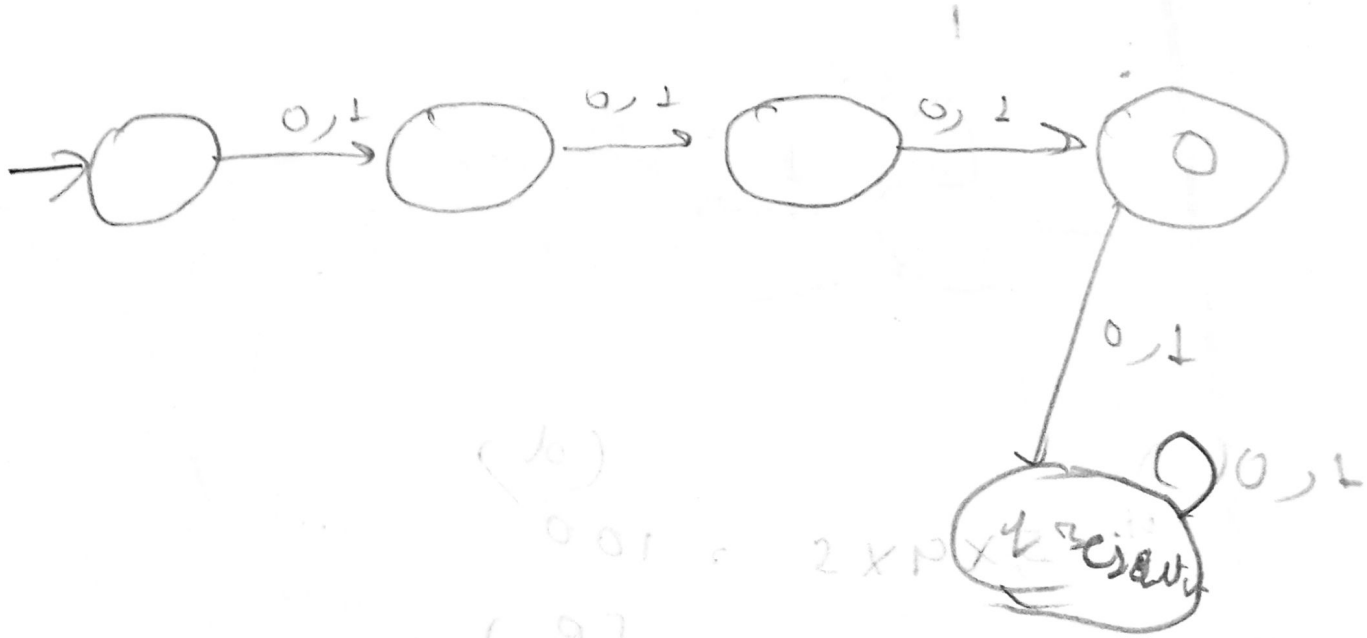
(e)



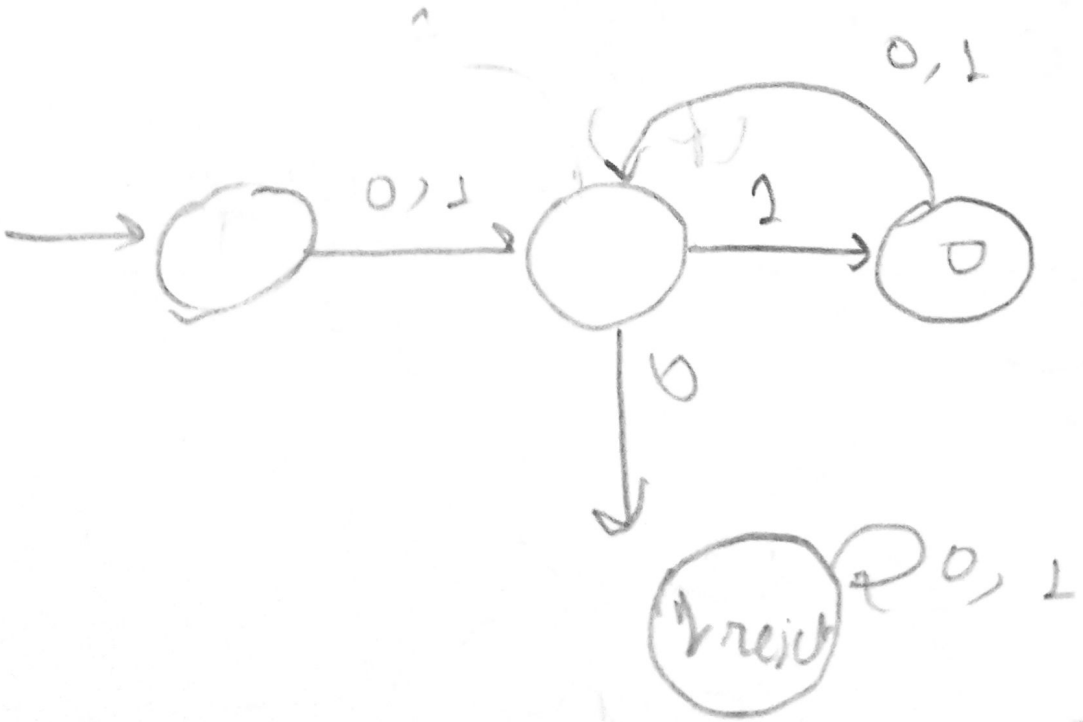
TOPIC NAME : DAY : TIME : DATE : / /

Fall 29 set B

(a)



(b)



(c)

(d)

5x9x5 = 100

(e)

010
110

(f)

Q. 2 one

Yes. ~~Cannot~~ the One strings of La & ~~010~~ and 110 which follows LS rules ∴ La ∈ LS possibility.

TOPIC NAME : DAY : TIME : DATE : / /

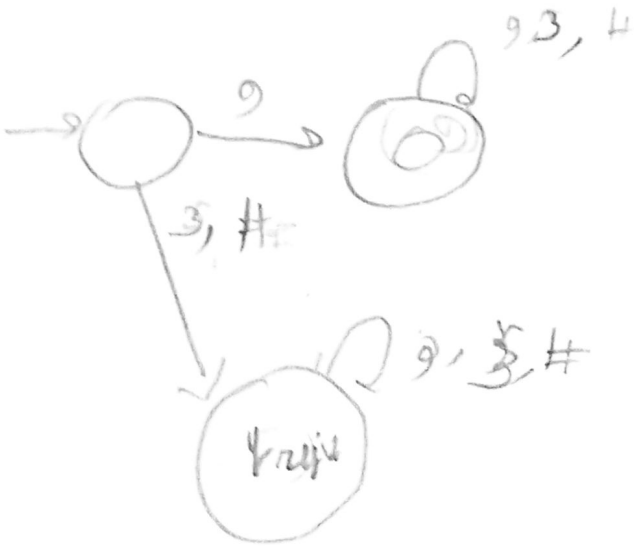
Fall23 K

(a) 13 93

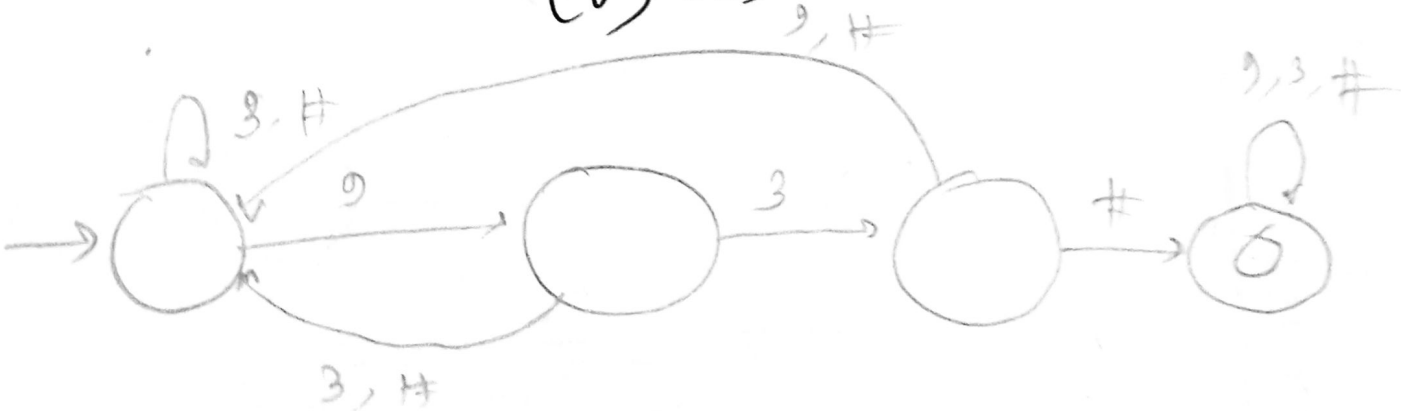
A = 9 B = 3

$\Sigma = \{9, 3, \#\}^4$

(b)



(c)



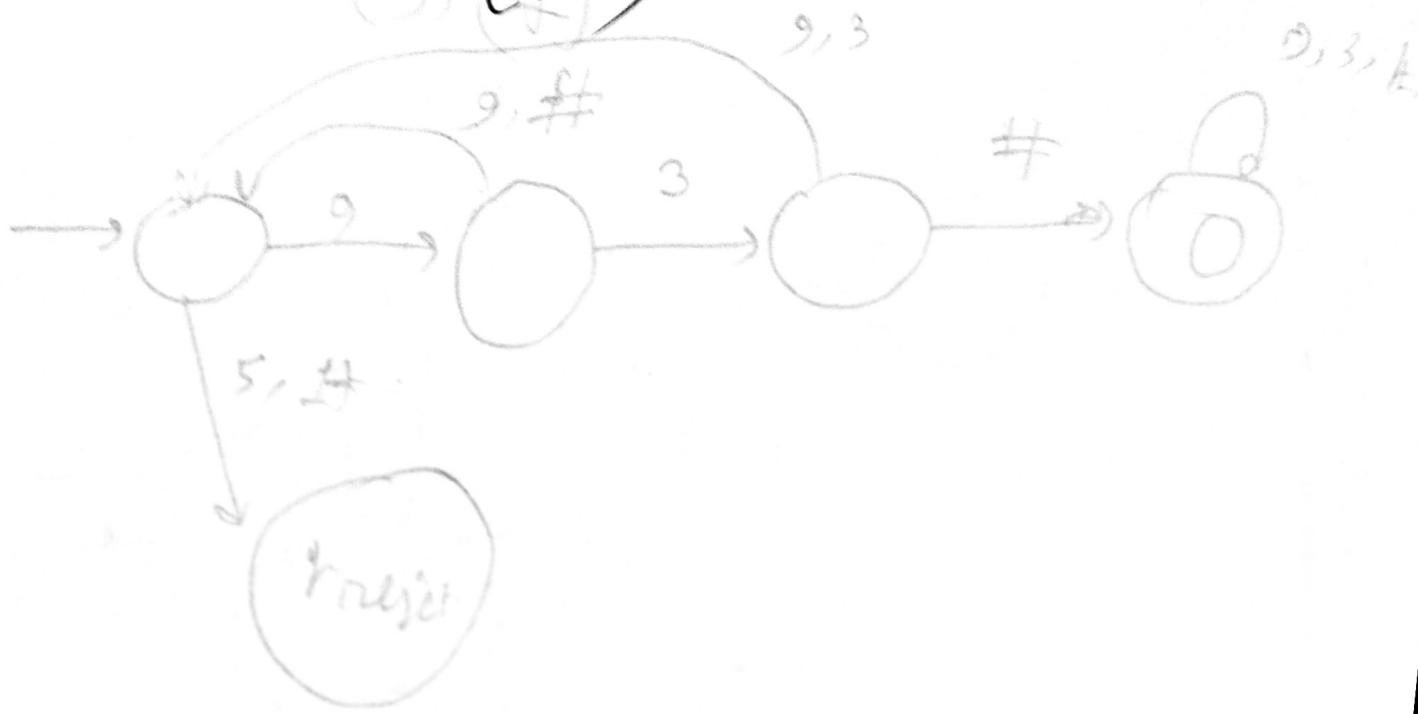
TOPIC NAME: DAY TIME DATE / /

(d)

(e)

$4 \times 3 = 12$

(f)

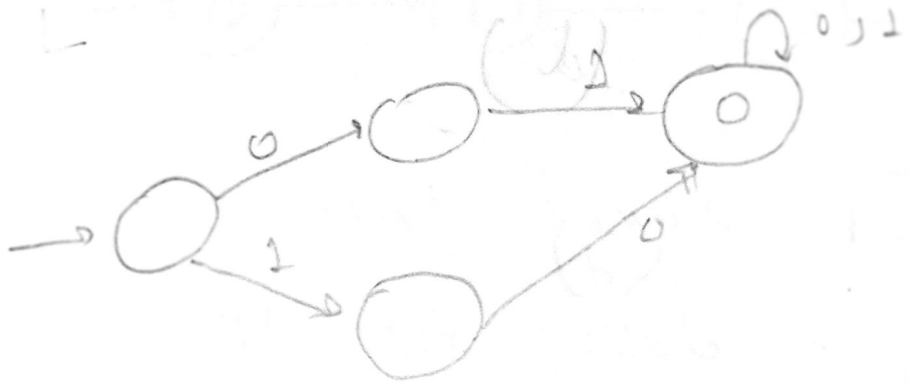


TOPIC NAME : DAY : TIME : DATE : / /

Fall 22 set L

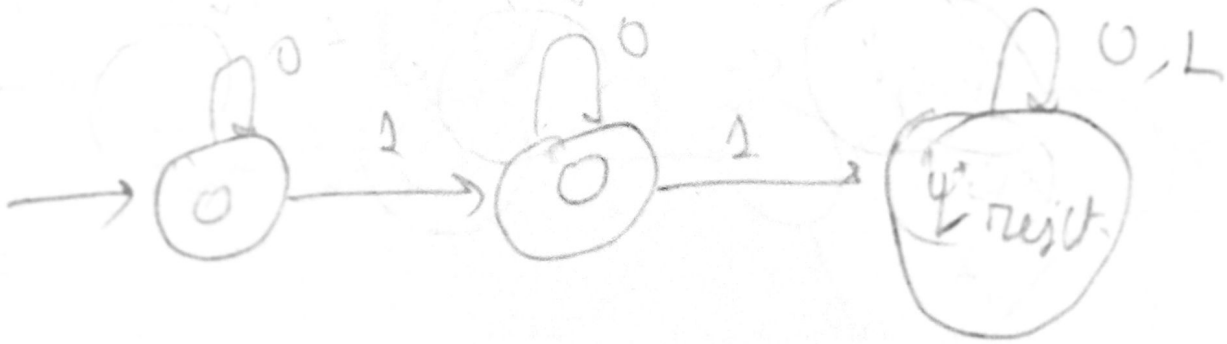
1/Any

(a)



(b)

0 0
1 0
0 1



TOPIC NAME : DAY TIME DATE / /

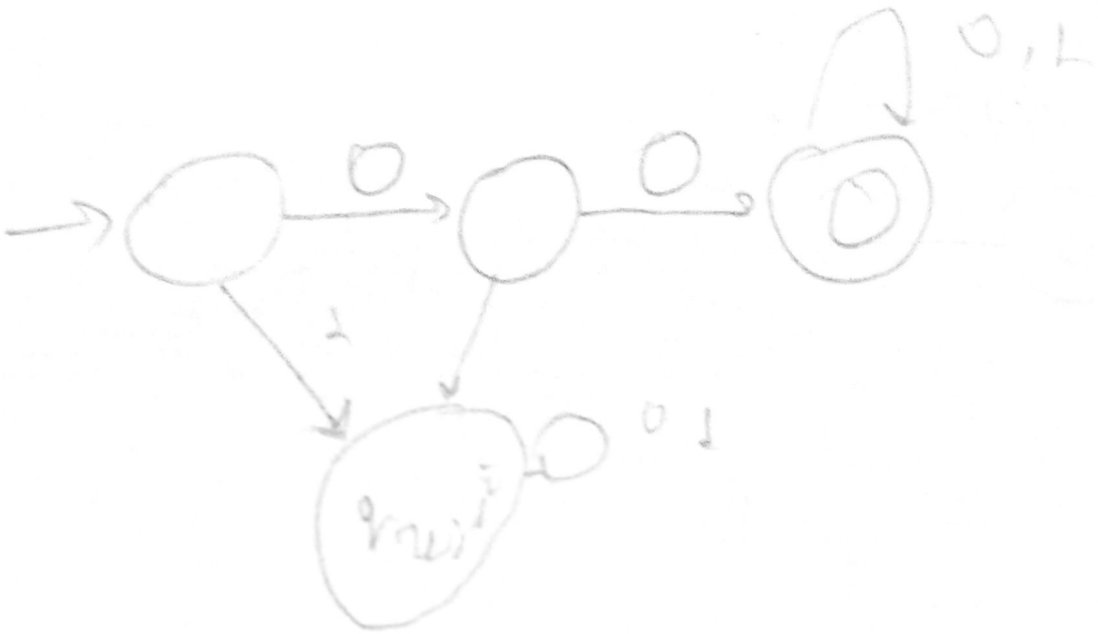
(c)

(d)

L_1 = does not start with (01 or 10)

L_2 = does not start with 11

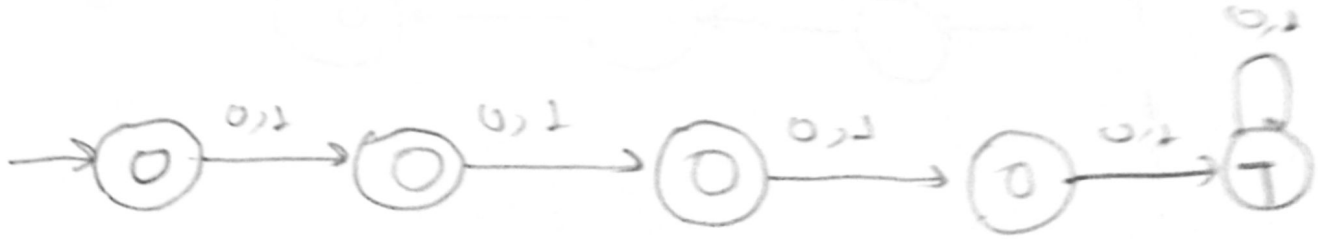
L_3 = length of w is 4.



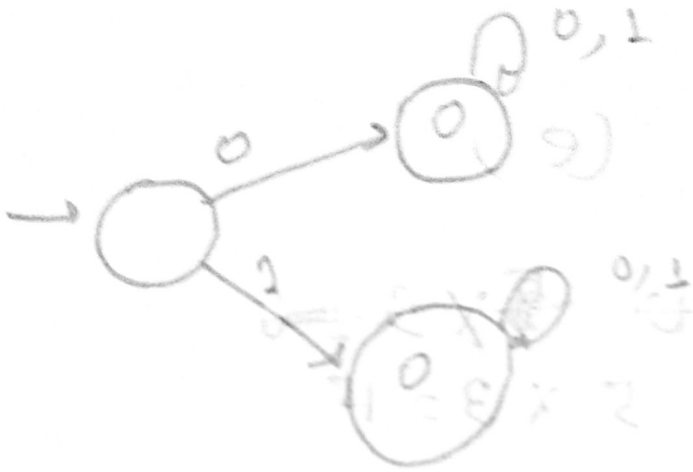
TOPIC NAME: DAY TIME DATE / /

Pdf 2 2 set L

(a)

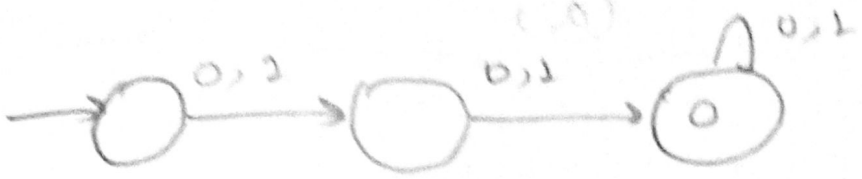


(b)



TOPIC NAME : DAY : TIME : DATE : / /

(c)



(d)

0000

(e)

~~5 x 2 = 10~~ ~~5 x 3 = 6~~

5 x 3 = 15

(f)

3 x2 = 6