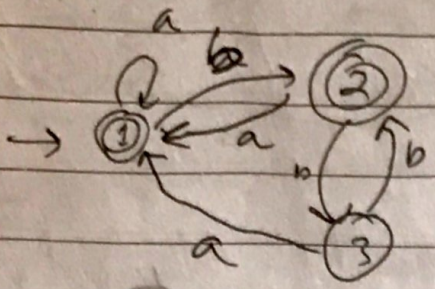
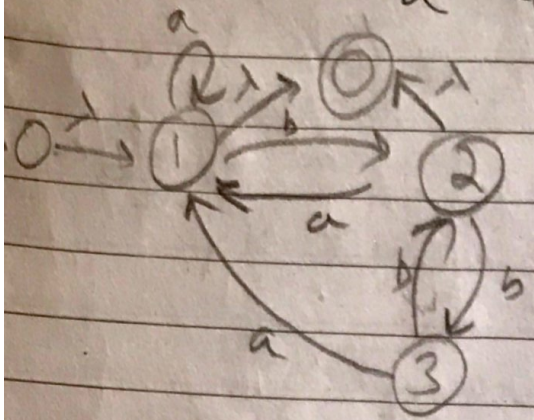
2K-1644 Sec. 4E

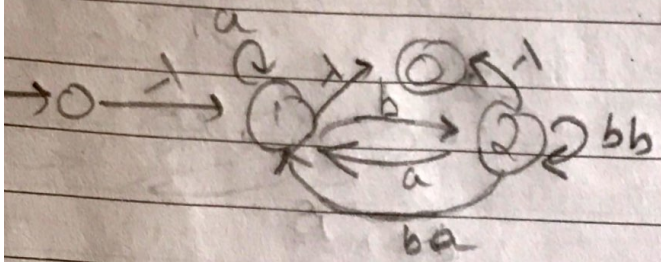
TOA (Assignment #02)

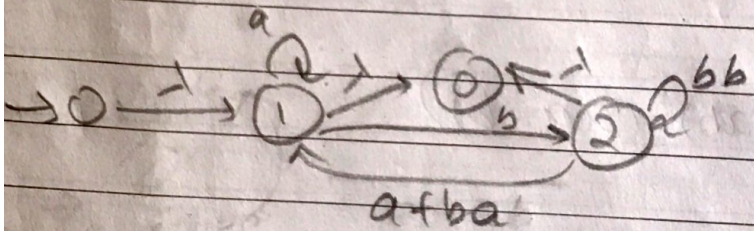
Date:

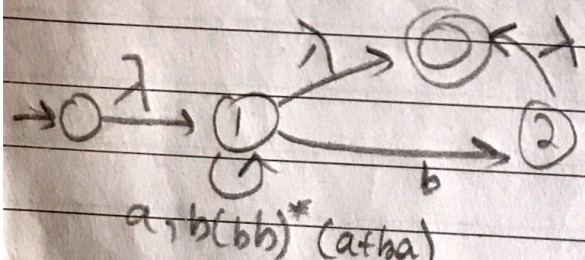
Q1:-

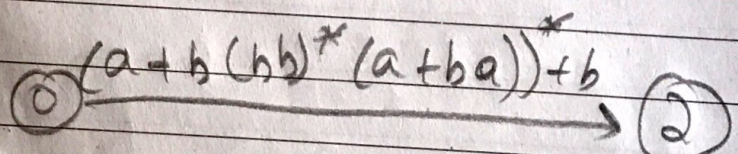










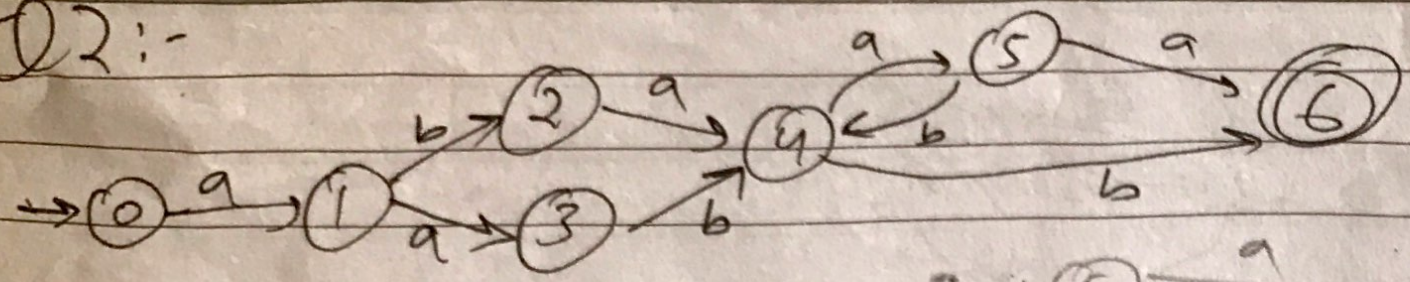


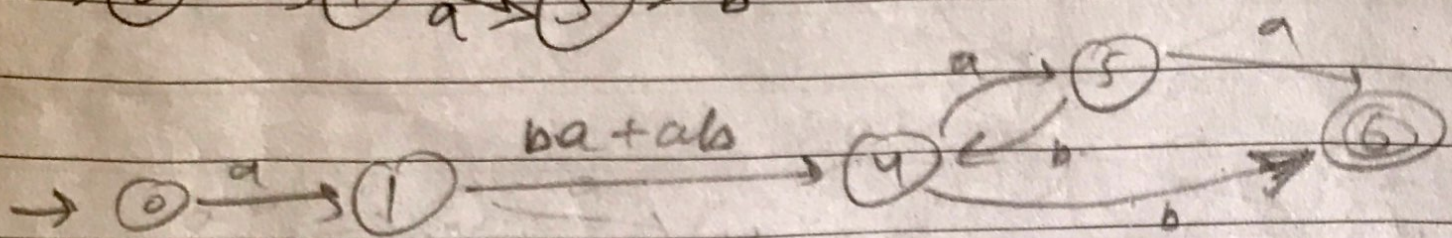
R.E : $(a+b(bb)^*(a+ba))^*+b$

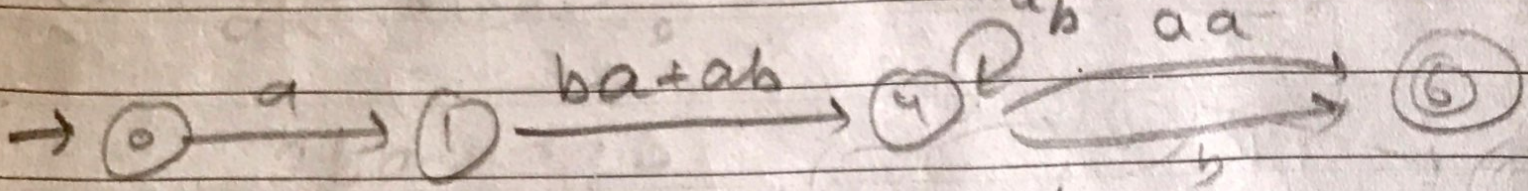
(2)

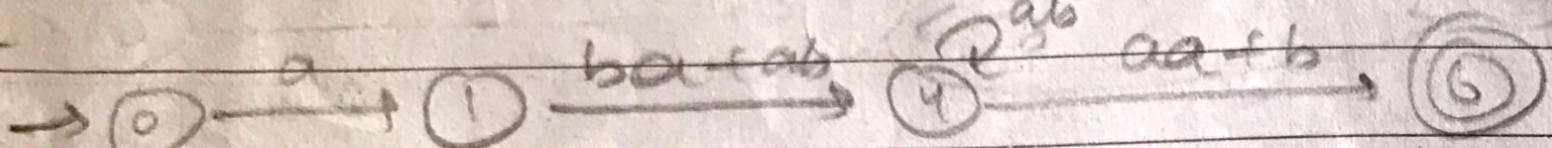
Date:

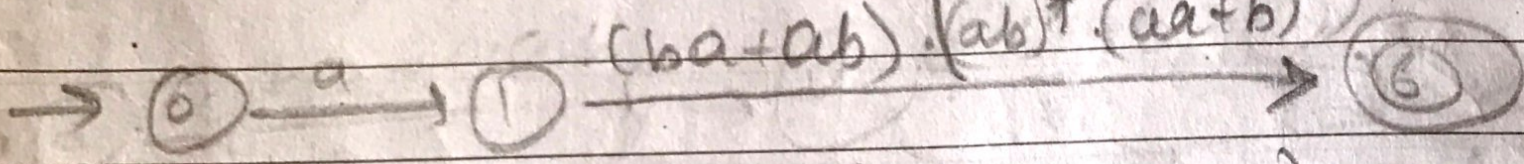
Q2:-

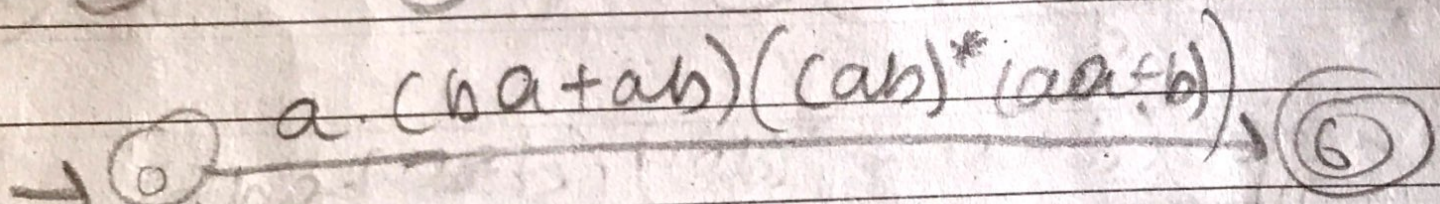










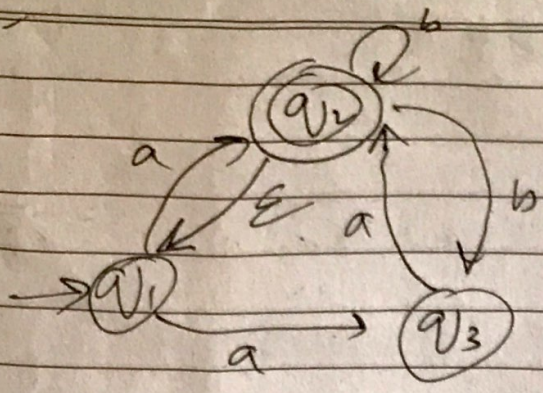


RE = a.(ba+ab)(ab)*(aa+b)

(b)

Q 3:-

Date:

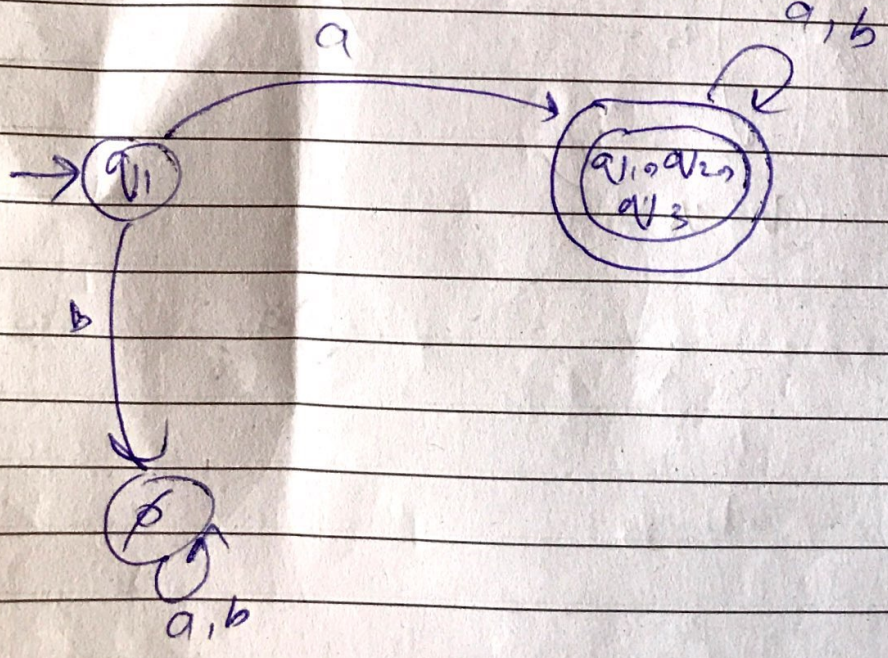


NFA Table:-

States	a	b
q_1	q_1, q_2, q_3	ϕ
q_2	q_1, q_2, q_3	q_1, q_2, q_3
q_3	q_1, q_2	ϕ

DFA Table:-

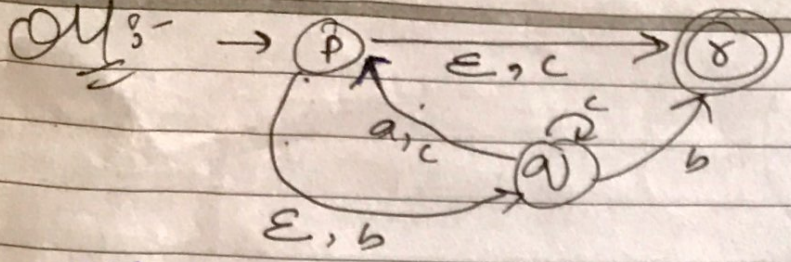
States	a	b
q_1	q_1, q_2, q_3	ϕ
q_1, q_2, q_3	q_1, q_2, q_3	q_1, q_2, q_3
ϕ	ϕ	ϕ



(4)

Date:

Ans:-

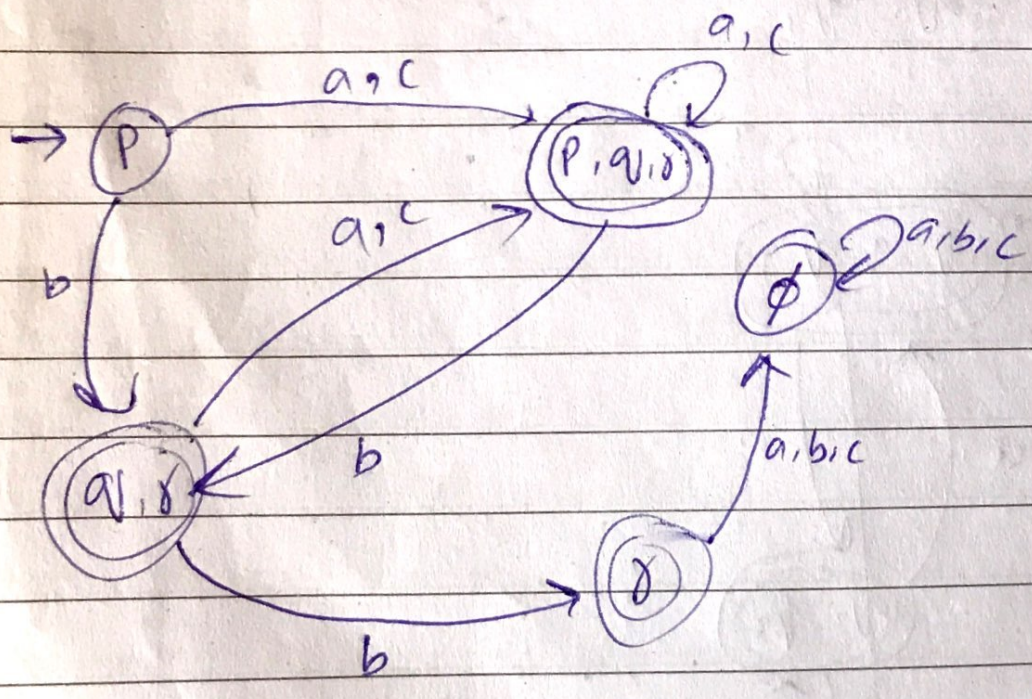


NFA table:-

States	a	b	c
p	p, q, r	q, r	p, q, r
q	p, q, r	r	p, q, r
r	ϕ	ϕ	ϕ

DFA table:-

States	a	b	c
p	p, q, r	q, r	p, q, r
+p, q, r	p, q, r	q, r	p, q, r
+ q, r	p, q, r	r	p, q, r
+ r	ϕ	ϕ	ϕ
ϕ	ϕ	ϕ	ϕ



Date:

Q5:- NFA to DFA

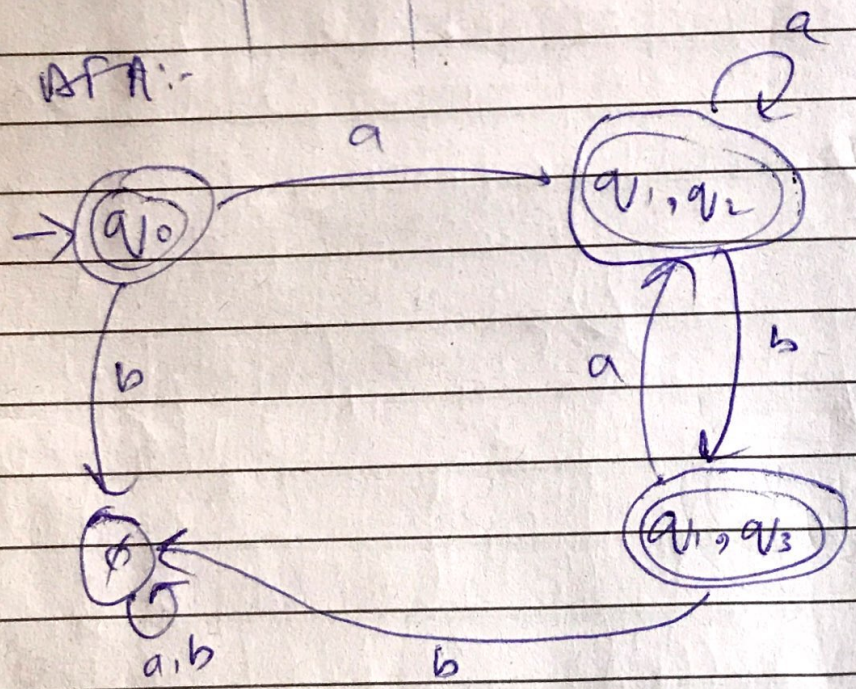
NFA Table :-

States	a	b
q_0	q_1, q_2	ϕ
q_1	q_1, q_2	ϕ
q_2	ϕ	q_1, q_3
q_3	q_1, q_2	ϕ

DFA table :-

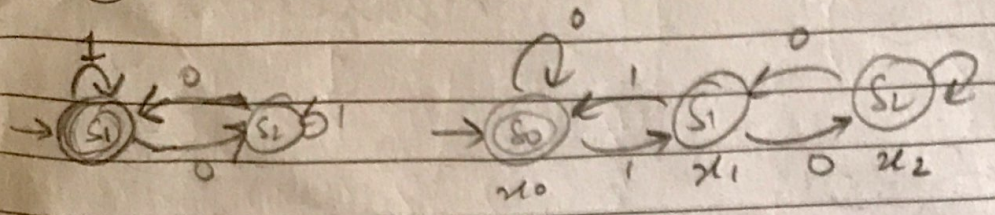
States	a	b
→ q_0	q_1, q_2	ϕ
+ q_1, q_2	q_1, q_2	q_1, q_3
ϕ	ϕ	ϕ
+ q_1, q_3	q_1, q_2	ϕ

DFA :-

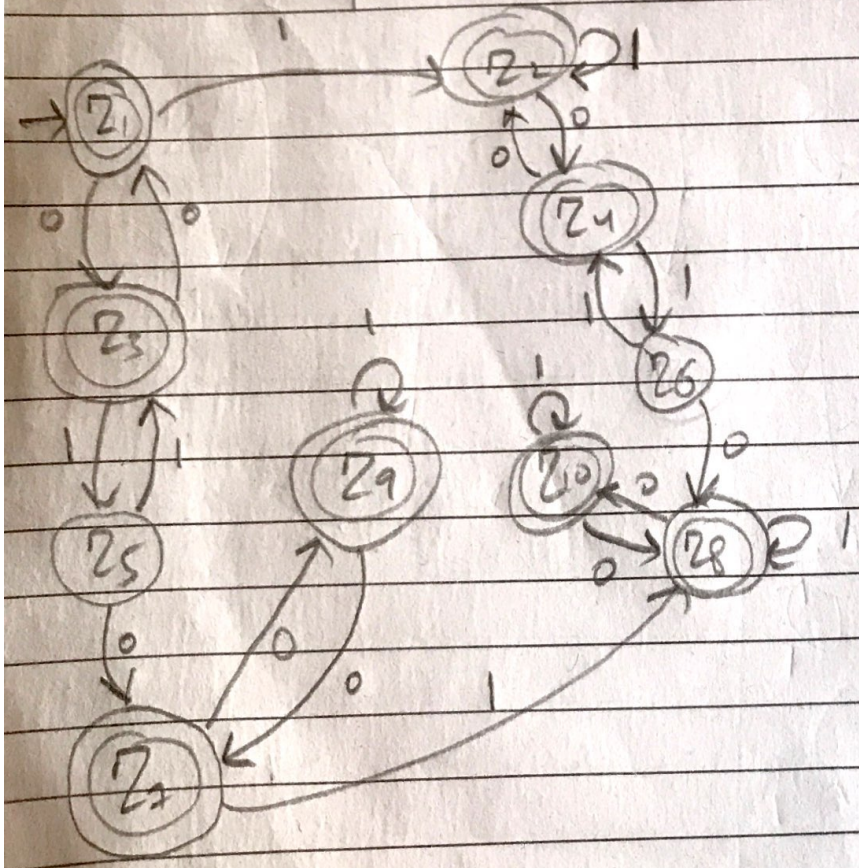


Date:

(1) Concatenation:-



	1	0
$Z_1 \equiv (S_1, x_0)$ †	$Z_1 \equiv (S_1, x_0, x_1)$	$Z_3 \equiv (S_2, x_0)$
$Z_2 \equiv (S_1, x_0^+, x_1)$	$Z_2 \equiv (S_1, x_0, x_1)$	$Z_4 \equiv (S_2, x_0, x_2)$
$Z_3 \equiv (S_2, x_0)^+$	$Z_5 \equiv (S_2, x_1)$	$Z_1 \equiv (S_1, x_0)$
$Z_4 \equiv (S_2, x_0^+, x_2)$	$Z_6 \equiv (S_2, x_1, x_2)$	$Z_2 \equiv (S_1, x_0, x_1)$
$Z_5 \equiv (S_2, x_1)$	$Z_3 \equiv (S_2, x_0)$	$Z_7 \equiv (S_1, x_0, x_2)$
$Z_6 \equiv (S_2, x_1, x_2)$	$Z_4 \equiv (S_2, x_0, x_2)$	$Z_8 \equiv (S_1, x_0, x_2, x_1)$
$Z_7 \equiv (S_1, x_0^+, x_2)$	$Z_8 \equiv (S_1, x_0, x_1, x_2)$	$Z_9 \equiv (S_2, x_0, x_1)$
$Z_8 \equiv (S_1, x_0^+, x_2, x_1)$	$Z_8 \equiv (S_1, x_0, x_1, x_2)$	$Z_{10} \equiv (S_2, x_0, x_1, x_2)$
$Z_9 \equiv (S_2, x_0^+, x_1)$	$Z_9 \equiv (S_2, x_1, x_0)$	$Z_7 \equiv (S_1, x_0, x_2)$
$Z_{10} \equiv (S_2, x_0^+, x_1, x_2)$	$Z_{10} \equiv (S_2, x_1, x_0, x_2)$	$Z_8 \equiv (S_1, x_0, x_2, x_1)$

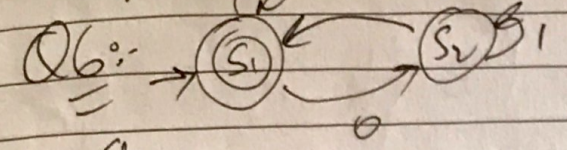


Q7

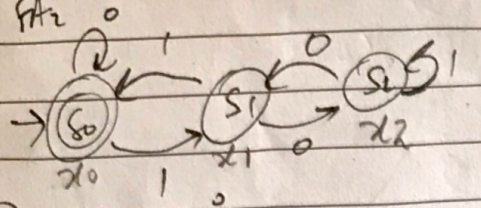
Date:

FA1

Q6:-



FA2

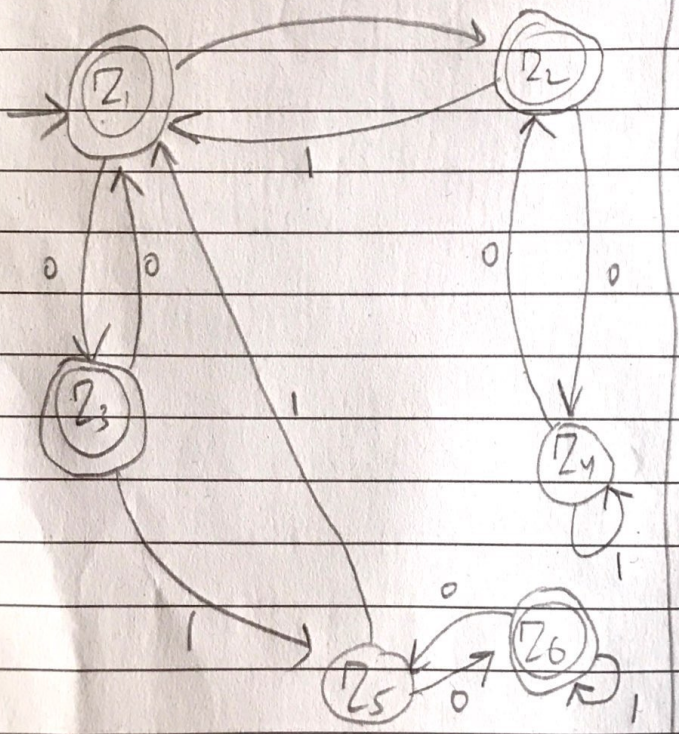


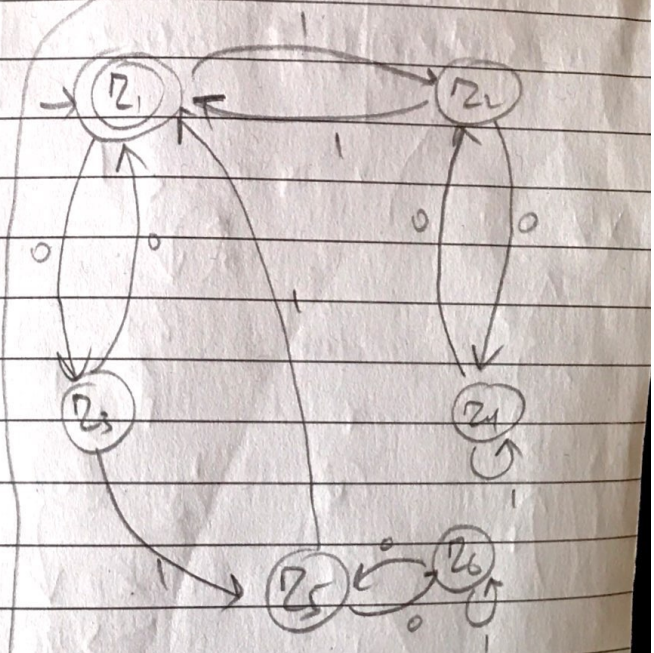
(2) Union:-

	1	0
$Z_1 \equiv (S_1, x_0)$	$Z_3 \equiv (S_1, x_1)$	$Z_2 \equiv (S_2, x_0)$
$Z_2 \equiv (S_1, x_1)$	$Z_1 \equiv (S_1, x_0)$	$Z_4 \equiv (S_2, x_2)$
$Z_3 \equiv (S_2, x_0)$	$Z_5 \equiv (S_2, x_1)$	$Z_1 \equiv (S_1, x_0)$
$Z_4 \equiv (S_2, x_2)$	$Z_4 \equiv (S_2, x_2)$	$Z_2 \equiv (S_1, x_1)$
$Z_5 \equiv (S_2, x_1)$	$Z_1 \equiv (S_1, x_0)$	$Z_6 \equiv (S_1, x_2)$
$Z_6 \equiv (S_1, x_2)$	$Z_6 \equiv (S_1, x_2)$	$Z_5 \equiv (S_2, x_1)$

(3) Intersection:-

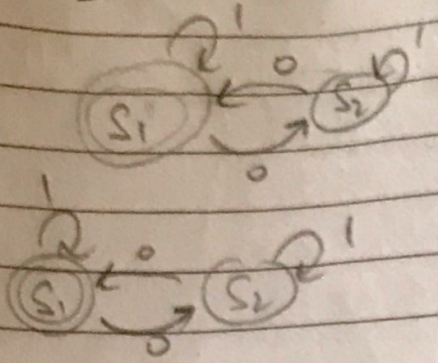
	1	0
$Z_1 \equiv (S_1, x_0)$	$Z_2 \equiv (S_1, x_1)$	$Z_3 \equiv (S_2, x_0)$
$Z_2 \equiv (S_1, x_1)$	$Z_1 \equiv (S_1, x_0)$	$Z_4 \equiv (S_2, x_2)$
$Z_3 \equiv (S_2, x_0)$	$Z_5 \equiv (S_2, x_1)$	$Z_1 \equiv (S_1, x_0)$
$Z_4 \equiv (S_2, x_2)$	$Z_4 \equiv (S_2, x_2)$	$Z_2 \equiv (S_1, x_1)$
$Z_5 \equiv (S_2, x_1)$	$Z_1 \equiv (S_1, x_0)$	$Z_6 \equiv (S_1, x_2)$
$Z_6 \equiv (S_1, x_2)$	$Z_6 \equiv (S_1, x_2)$	$Z_5 \equiv (S_2, x_1)$





Date:

4. Closure :-



States	1	0
$\pm Z_1 \equiv S_1$	$Z_1 \equiv S_1$	$Z_2 \equiv S_2$
$Z_2 \equiv S_2$	$Z_2 \equiv S_2$	$Z_1 \equiv S_1$