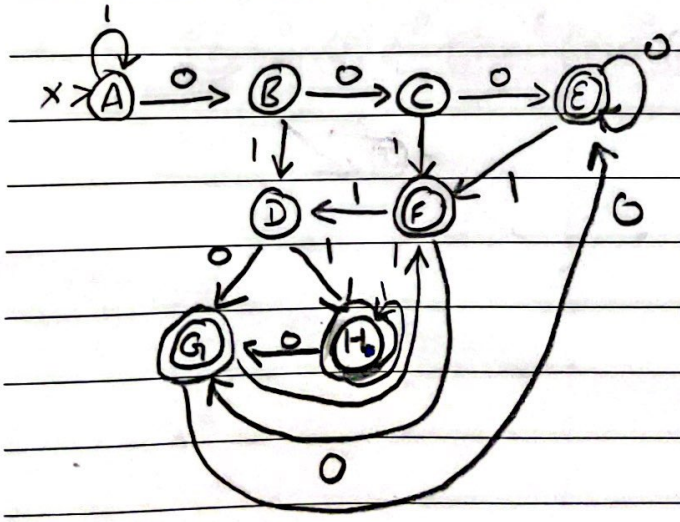
Date CS302 HW1

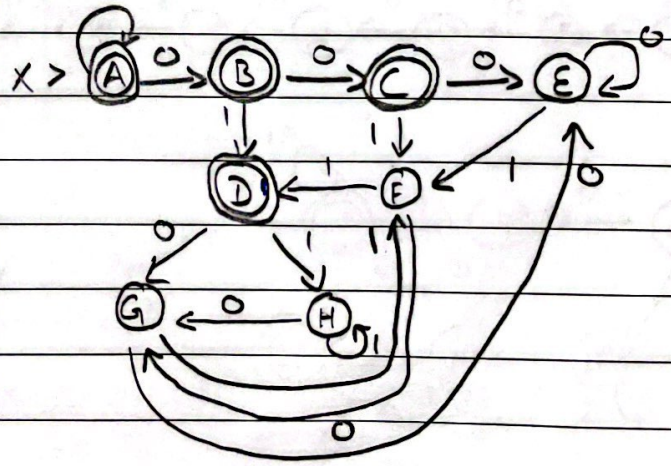
Q1.

A → q_0	0	$\{q_0, q_1\}$ B
A q_0	1	q_0 A
B $\{q_0, q_1\}$	0	$\{q_0, q_1, q_2\}$ C
B $\{q_0, q_1\}$	1	$\{q_0, q_2\}$ D
C $\{q_0, q_1, q_2\}$	0	$\{q_0, q_1, q_2, q_3\}$ E*
C $\{q_0, q_1, q_2\}$	1	$\{q_0, q_2, q_3\}$ F*
D $\{q_0, q_2\}$	0	$\{q_0, q_1, q_3\}$ G*
D $\{q_0, q_2\}$	1	$\{q_0, q_3\}$ H*
E $\{q_0, q_1, q_2, q_3\}$	0	$\{q_0, q_1, q_2, q_3\}$ E
E $\{q_0, q_1, q_2, q_3\}$	1	$\{q_0, q_2, q_3\}$ F
F $\{q_0, q_2, q_3\}$	0	$\{q_0, q_3, q_3\}$ G
F $\{q_0, q_2, q_3\}$	1	$\{q_0, q_3\}$ D
G $\{q_0, q_1, q_3\}$	0	$\{q_0, q_1, q_2, q_3\}$ E
G $\{q_0, q_1, q_3\}$	1	$\{q_0, q_2, q_3\}$ F
H $\{q_0, q_3\}$	0	$\{q_0, q_1, q_3\}$ G
H $\{q_0, q_3\}$	1	$\{q_0, q_3\}$ H

DFA:



DFA of L^c:



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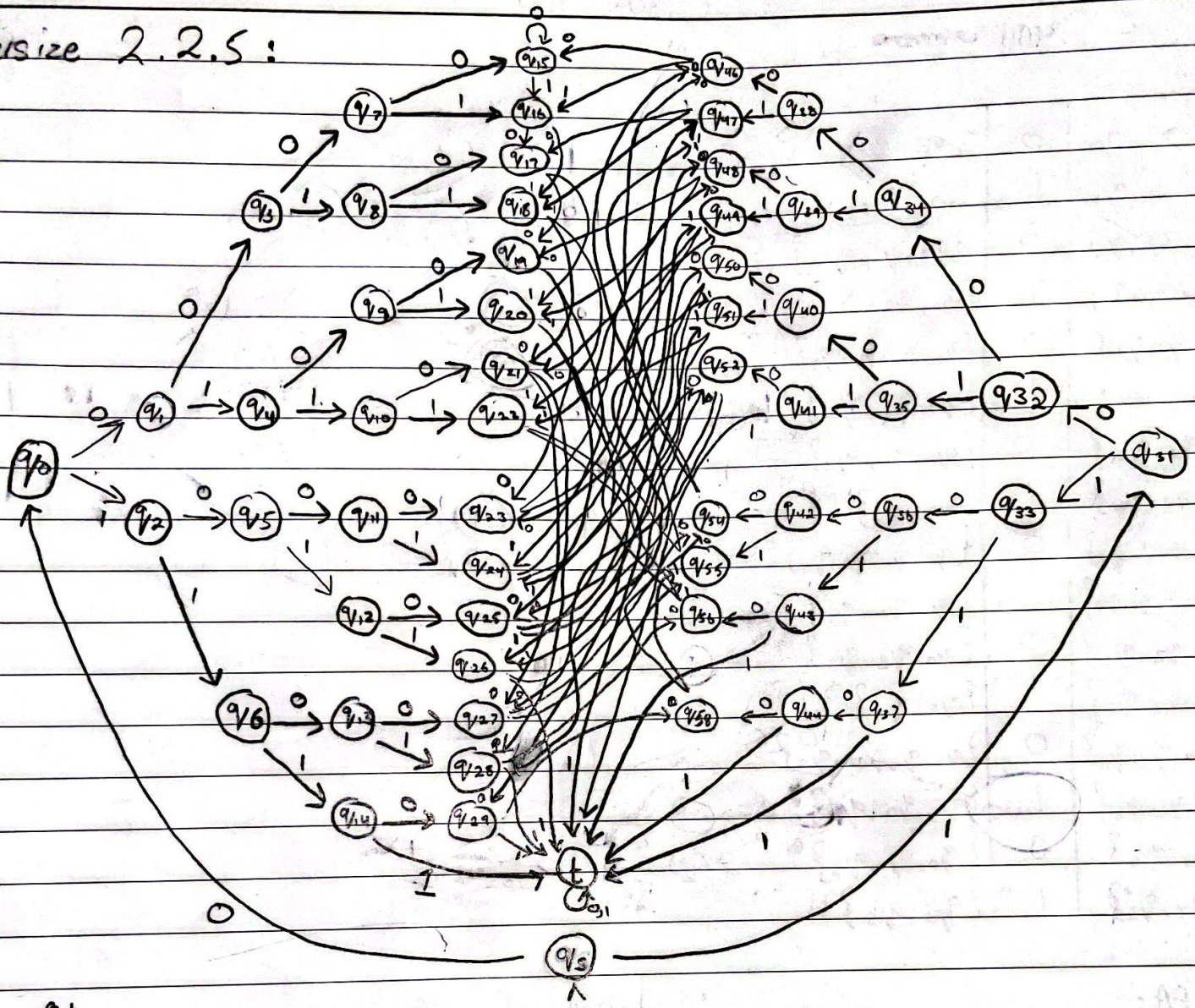
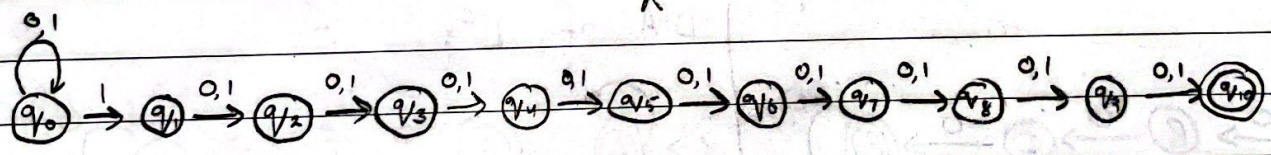
Excersize 2.2.5:

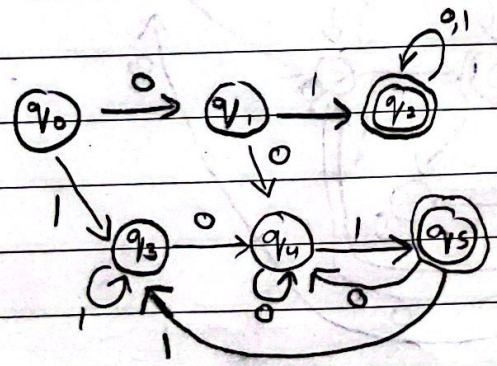
a)



b) X >



c) X >



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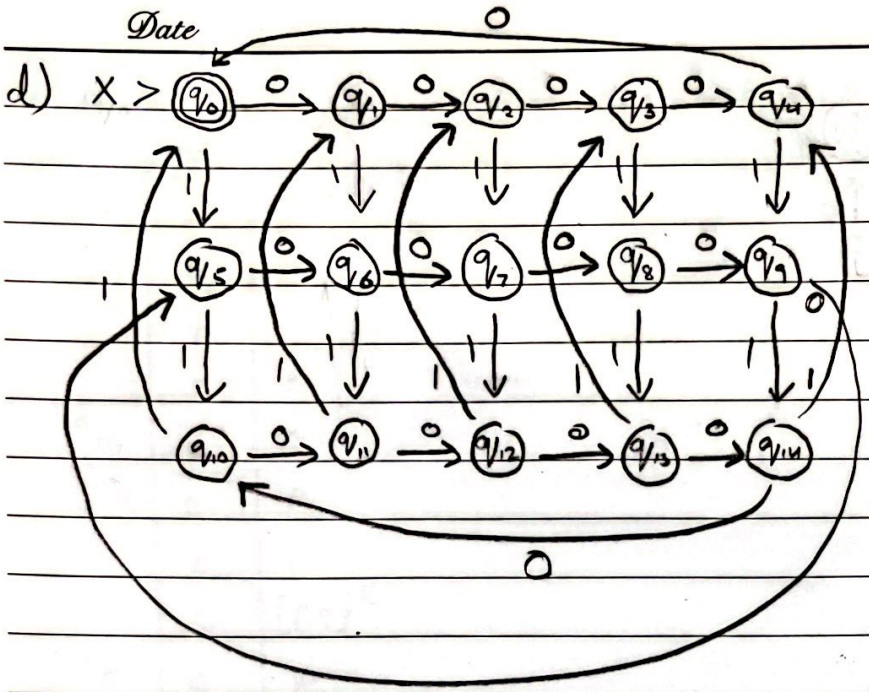
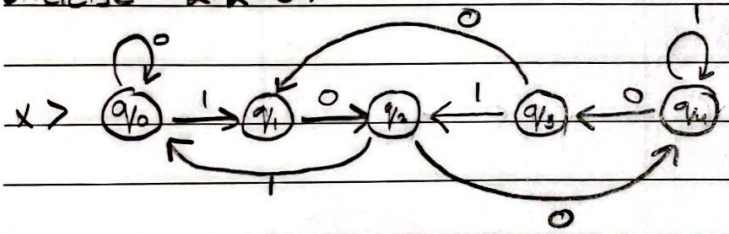
d) 

Exercise 2.2.6:



Exercise 2.33:

A		
P	0	$\{P, q\}^F$
	1	P
B q	0	$\{r, s\}^{G^*}$
	1	t
C r	0	$\{P, r\}^H$
	1	t
D * s	0	$\emptyset$
	1	$\emptyset$
E †	0	$\emptyset$
	1	$\emptyset$

F	0	$\{P, q, r, s\}^{I^*}$
	1	P
G	0	$\{P, r\}$
	1	t
H	0	$\{P, q, r\}^J$
	1	$\{P, t\}^{K^*}$
I	0	$\{P, q, r, s\}$
	1	$\{P, t\}$
J	0	$\{P, q, r, s\}$
	1	$\{P, t\}$

continued →

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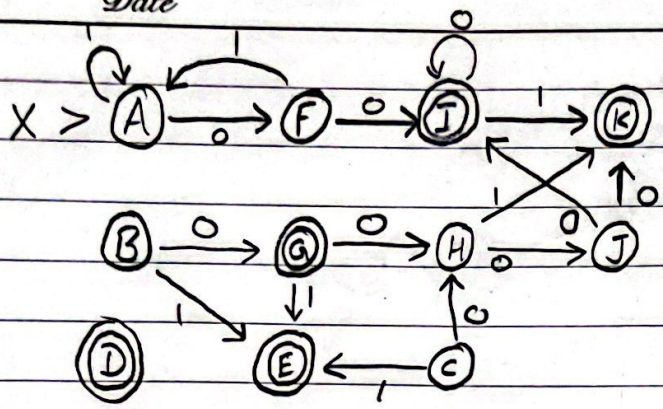
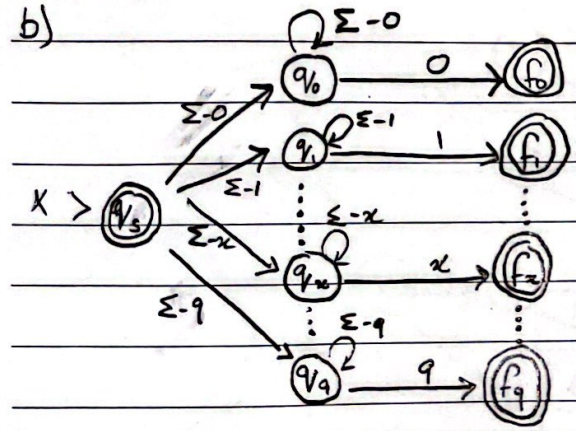
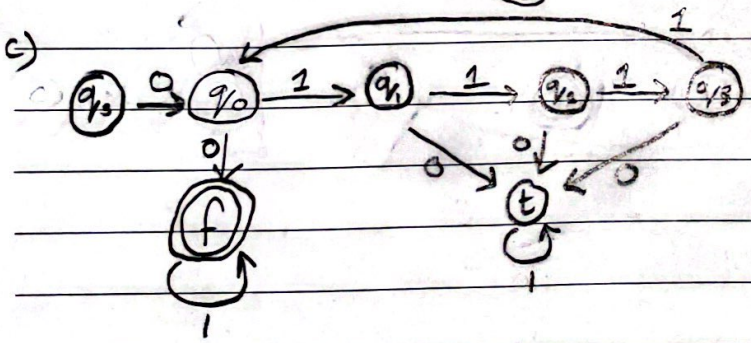


Exercise 2.3.4:

b)



c)



Exercise 2.5.2:

a) $ECLOSE(P) = \{q, r\}$

$ECLOSE(q) = \{P, q, r\}$

$ECLOSE(r) = \{\emptyset\}$

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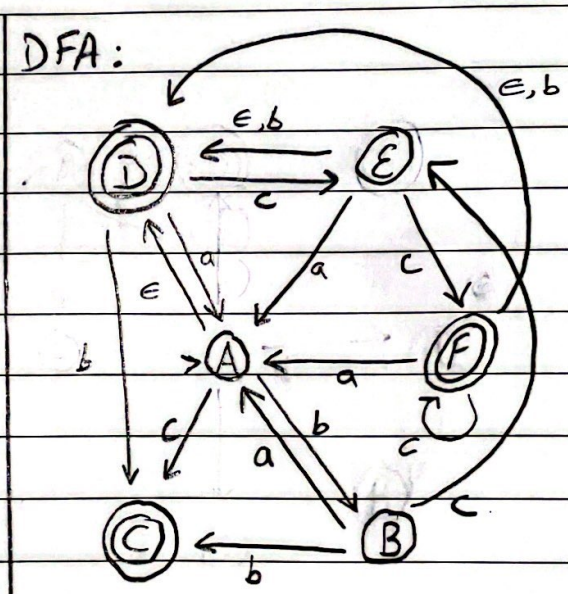
b) ϵ, c, ϵb, bb, bac, bcc, ϵac, ϵcc, bcb, ϵcb

c) →^{A}p	ϵ	{q,r}^{D}
	a	ϕ
	b	q
	c	r
^{B}q	ϵ	ϕ
	a	p
	b	r
	c	{p,q}^{E}
^{C}*r	ϵ	ϕ
	a	ϕ
	b	ϕ
	c	ϕ
*D	ϵ	ϕ
	a	p
	b	r
	c	{p,q}
E	ϵ	{q,r}
	a	p
	b	{q,r}
	c	{p,q,r}^{F}
*F	ϵ	{q,r}
	a	p
	b	{q,r}
	c	{p,q,r}

DFA:



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