Assignment #1

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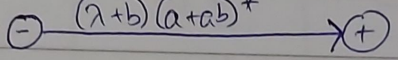
18K-0363
Section D

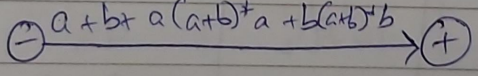
Q1. a) $(\lambda+b+bb)(a+ab+abb)^*$

b) $(\lambda+b+bb)(a+ab+abb)^*aaa(\lambda+b+bb)(a+ab+abb)^* + (\lambda+a+aa)(b+ba+baa)^*bbb(\lambda+a+aa)(b+ba+baa)^*$

Q2. a) $(\lambda+b)(a+ab)^*$



b) $a+b+a(a+b)^*a+b(a+b)^*b$



Q3.

states	0	1
a	b	d
b	a	c
*c	e	f
*d	e	f
*e	e	f
f	f	f

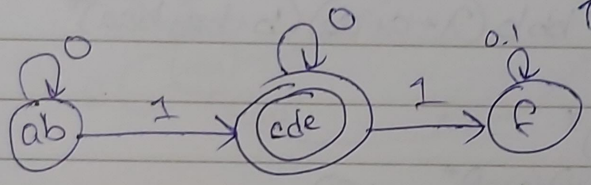
(2)

Initial & Final States

T_1	0	1
a	b	d
b	a	c
f	f	f

T_2	0	1
*c	e	f
*d	e	f
*e	e	f

↑ Similar States



(4.)

states	a	b	ε
q_0	-	-	q_0, q_1, q_2, q_3, q_4
q_1	q_1, q_2	-	q_1, q_2
q_2	-	q_2	q_2
q_3	-	q_3, q_4	q_3, q_4
q_4	q_4	-	q_4

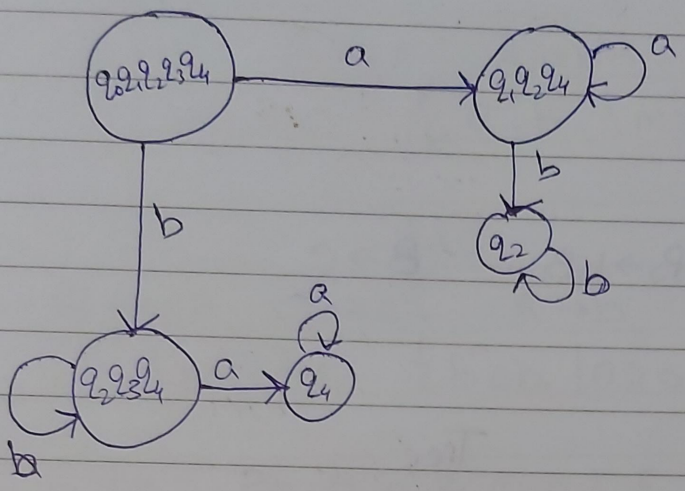
ε-NFA

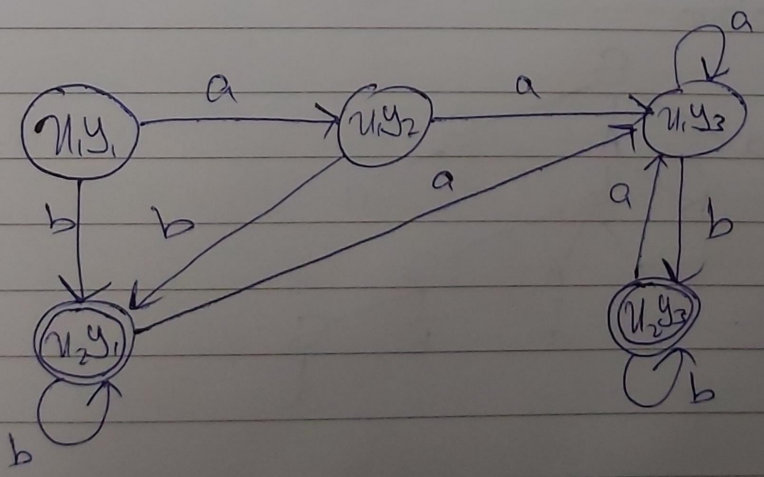
states	a	b
$q_0q_1q_2q_3q_4$	$q_1q_2q_4$	$q_2q_3q_4$
$q_1q_2q_4$	$q_1q_2q_4$	q_2
q_2	-	q_2
$q_2q_3q_4$	q_4	$q_2q_3q_4$
q_4	q_4	-

DFA

(PTO)

③



Q5.

	a	b
x_1y_1	x_1y_2	x_2y_1
x_1y_2	x_1y_3	x_2y_1
x_2y_1	x_1y_3	x_2y_1
x_1y_3	x_1y_3	x_2y_3
x_2y_2	x_1y_3	x_2y_3