Assignment -1
Automaty Theory

Roll.   2138

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Regular Expressions
Question - 1

a.

$\Sigma = \{0, 1\}$

$W = \{1, 101, 1011, 10101\}$

$R.E = 1(1+0)^* 1$

(b)

$L = \{0, 1\}$

$W = \{0, 1, 01, 10, 00, 101, 010\}$

$R.E = (01 + 10)^*$

(C)

$(11, 110)^* (0)$

$R.E = (11, 110)^* (0)$

$W = \{110, 1100, 110110\}$

Set of string ends with 0 start with 11

(d).

Language of string exactly two zero's

$\lambda = \{0, 1\}$

$w = \{00, 001, 0011, 1100\}$

~~R.E = {00+10)*~~

R.E = {00 + 1*}.

(e)

Language of string atleast two zero's

$w = \{00, 001, 100, 1100, 0001\}$

R.E = $(0 + 1)^*$ 00 $(1 + 0)^*$

(f)

1) No not End with 01

$L = 0, 1$

$w = \{10, 110, 01110\}$

R.E = $(0 + 1)^*$ 10

(g)

Zero Immidiatly follaved by 11

R.E = $(011 + 1)^*$

(h)

$\Sigma = \{0, 1\}$

$W = \{11, 010, 11010, 01011, 1111010\}$

R.E $= (11, 1010)^*$

(I)

$\Sigma = \{0, 1\}$

$W = \{010, 110, 1010\}$

R.E $= (0+1)^* (01+10)$
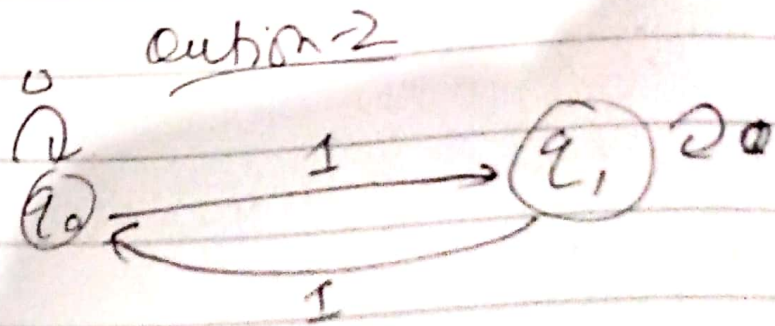
J

Even no of zero's

R.E $= (00)^* 1^*$

(k).

Do not contain 01 over $\{0, 1\}$

$\Sigma = \{0, 1\}$

$W = \{11100, 110, 10110\}$

R.G $= (10 + 1)^*$

Quetion 2

0

1

q_0

q_1

1

1

0

$\alpha = \{0, 1\}$

Quetion 1

Finate automata ends with double lett

$\alpha = \{0, 1\}$

$w = \{011, 100, 1100, 110100\}$

$R.E = (0+1)^* (00 + 11)$

0,1

00

−

+

11

Qustion-2

a,b

$R.E = (a+b)^* \; b \; (a+b)^*$

b

State (-) with self-loop a,b → State (+) with self-loop a,b
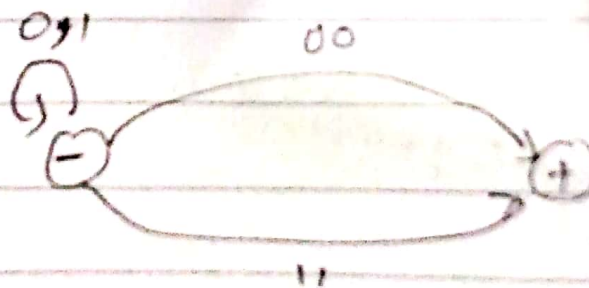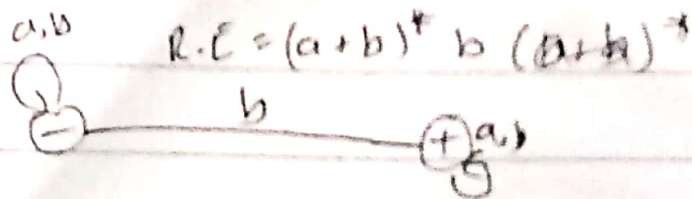
Qustion-3

$L = \{a,b\}$

$R.E = (a+b)(ab+ba)^* \; (a+b)(a+b)^*$

Qustion-4

$\alpha = \{a,b\}$

$W = \{baa, ab, , abb\}$

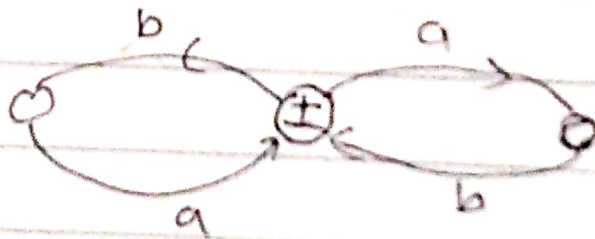$R.E = baa + ab + abb$

baa

abb

a bb

State (-) → State (+)
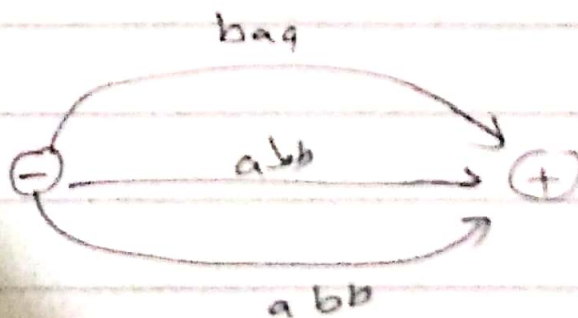
Qustion-5

$$\Delta = \{a, b\}$$
$$R.E = (a + b)(a + b)^*$$
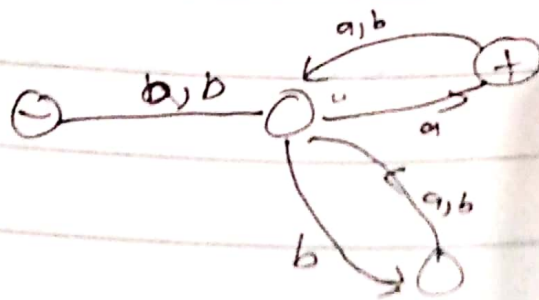
Qustion-6

$$L = (a, b) \qquad W = \{ababab, ba\}$$
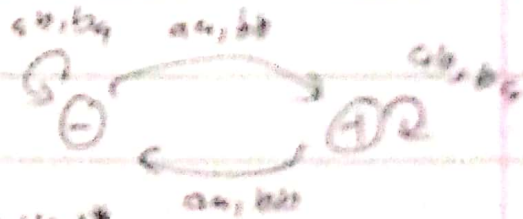$$R.E = \{ab^+ + ba^*\}$$

(a)-
$$L = \{a, b\}$$
$$W = \{ab, aab, b\}$$

$$R.E = [aa^*b + b]$$

(b)-
$$\lambda - \{a, b\}$$

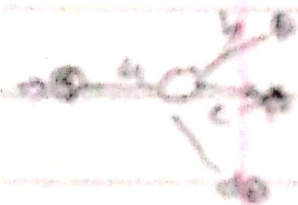$$R.E = \overset{(ab+ba)^*}{(aa + bb)^* (ab+ba)^*}$$

Question 5
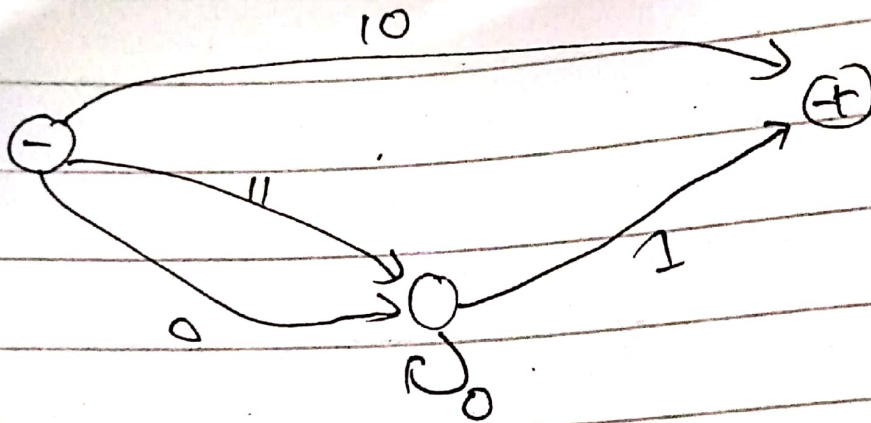$$L = \{a, b, c, d\}$$
$$R.E = a(b + c + d)$$

Ques-n-10

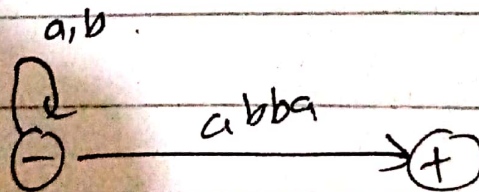$$R.E = 10 + (0 + 11)\ 0^* 1$$

Ques-on - 11

ends with abba

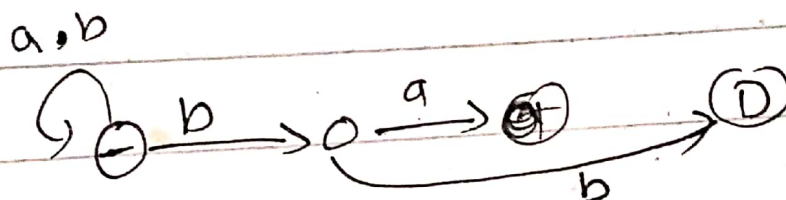$$L = \{a,b\}$$

$$R.E = (a+b)^* \ abba$$
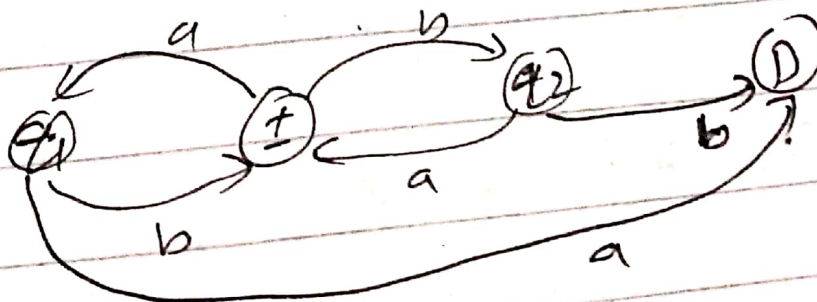
Question - 12

$L = \{a, b\}$
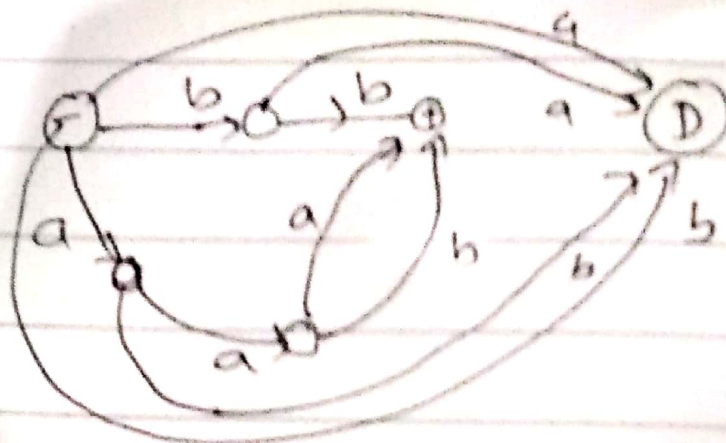
$R.E = (ab + ba)^* b$

DFAs

(a)

$(ab)^* ba$

a, b

(b)

$(ab)^* (bc)^*$

c

$$aa \ (a+b) + bb$$

d

$$(aa + bb)^*$$