✪ Never blindly trust anything.

If you find any mistake, kindly correct it and if possible inform in our grp too.

Thank you
18BCEI20.

Tutorial -3

Not sure about this explanation

1 (i) $(0^* 1)^* = (0+1)^*$ ✗ 0^*1 not accept 00 $(0+1)^*$ accept 00

(ii) $(0+1)^* 01 (0+1)^* + 1^*0^* \neq (0+1)^*$ ✗

$$LHS = (0+1)^* 01 (0+1)^* + 1^* 0^*$$
$$= (0+1)^* (0+1)^* + 1^* 0^*$$
$$= (0+1)^* + 1^* 0^*$$
$$= (0+1)^*$$

LHS $\neq$ RHS

But answer is (i) ~~True~~ False

(ii) False

2 Lang. $(a + b(b+aa)^* ab)^*$

state	$\delta(2,a)$	$\delta(2,b)$
2_0	2_0	2_1
2_1	2_2	2_1
2_2	2_1	2_0

final state ? $= 2_0$,   Ans 2_0 only
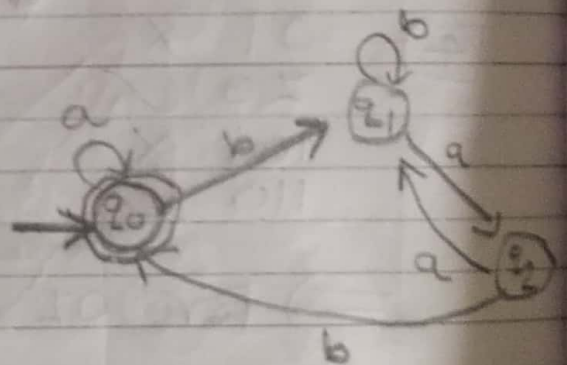
✓ 2_0 because null string should be possible

✗ 2_1 if we make 2_1 final then string b will be accepted. which is not part of given language

✗ 2_2 if we make 2_2 final then "ba" will be accepted which is not part of L

③ $(a+b)^* a (a+b)^* b (a+b)^*$ given in question

eliminating

✗B in option Ⓑ I can't start from symbol
B.

✗C in option Ⓒ string aa possible but in
our question aa is not possible

in option Ⓓ string ba possible but in
our question ba is not possible

Answer ⓐ $(a+b)^* ab (a+b)^*$ ✓

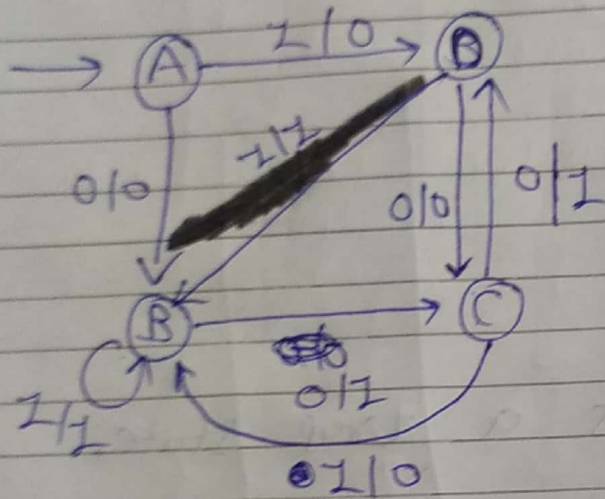[Direct bi pata chal jata ☺]

Ⓑ initial state

④ 01 ✗
20 ✓   all state possible as
101 ✗   initial state
110 ✓

                              always   final
⟹ for 01 and 101 it will goto state B

⟹ for 10 and 110 it will goto final state C.

shortest string 10 Ans

④ Method 1 :-

Mealy machine

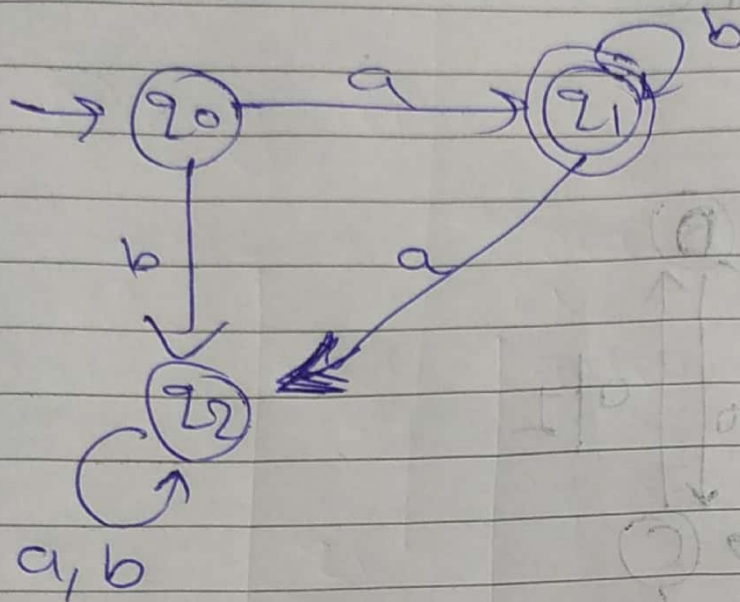| if initial state	Shortest path to C
A	10 or 00
B	0
c(min)	10' or 00
D	0

So, answer B.

④ Method 2

if initial state is , then final state

strings↓	A	B	C	D
01	B	B	B	B
10	C	C	C	C
101	B	B	B	B
110.	C	C	C	C

⑤ initial q_0
Final q_1

I have take
q_1 as q, and
q_2 as q_2.

a, b

→ Here, q_2 is a trap state.

so, only possible answer is $\{a\,b_n, n \geq 0\}$
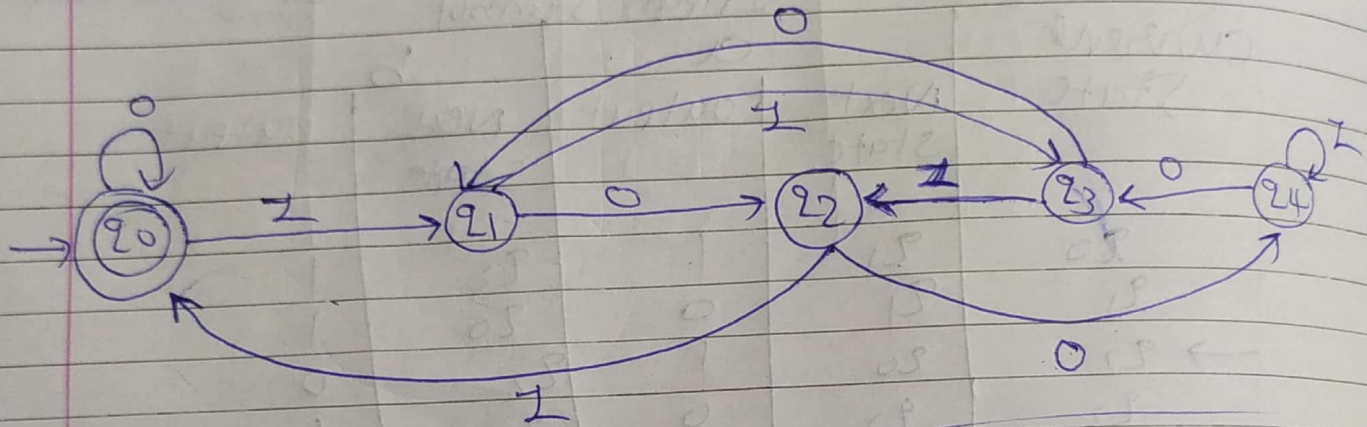
2. All binary string divisible by 5

DFA Transition Table

current state	0	1
q0	q0	q1
q1	q2	q3
q2	q4	q0
q3	q1	q2
q4	q3	q4

Watch Youtube Video. of

Asha khilrani.
for this kind
of question

Possible String To verify Answer

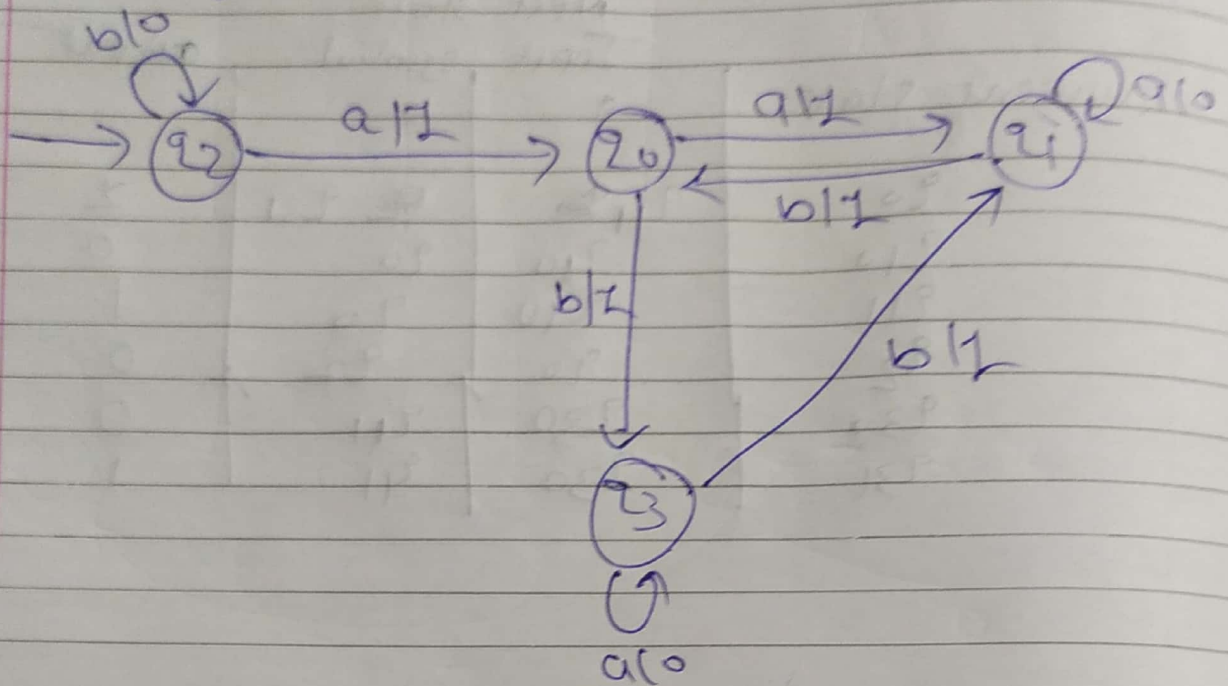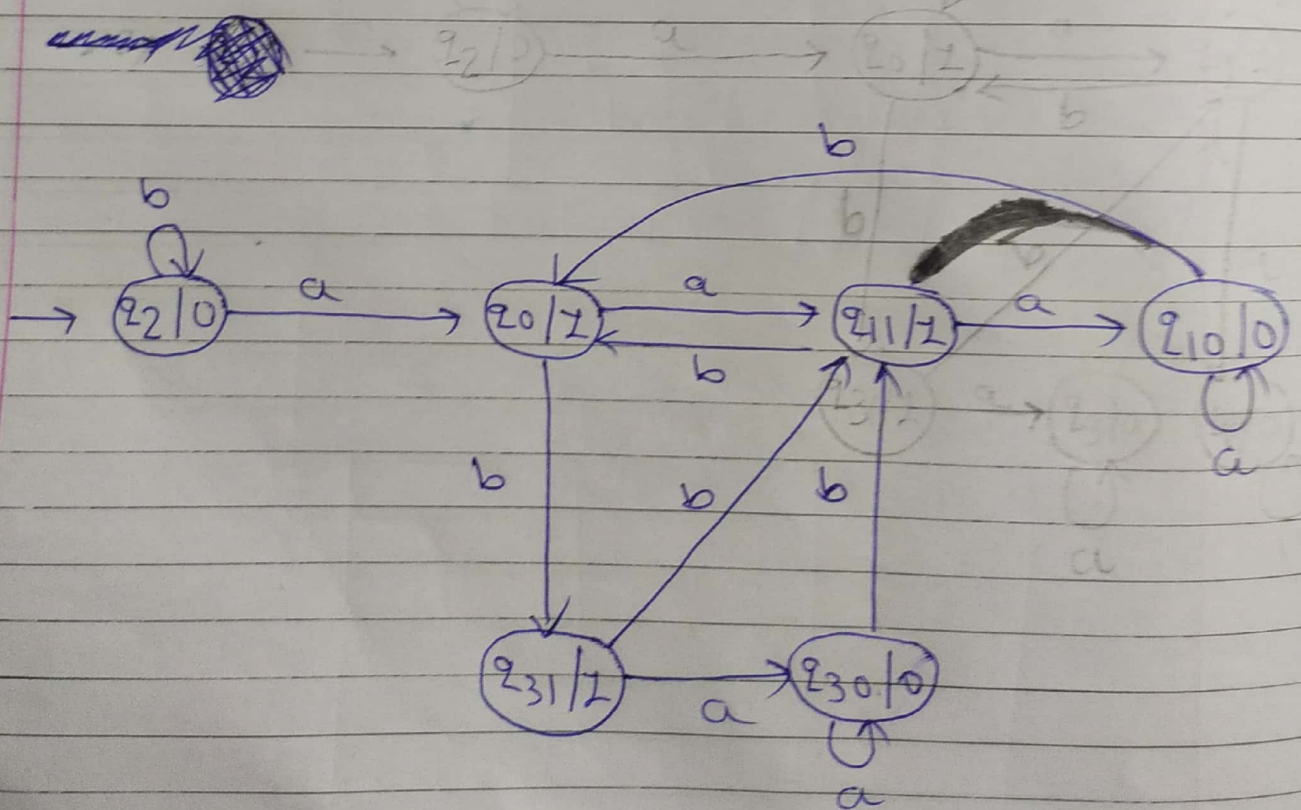|		16	8	4	2	1
	0					0
	5			1	0	1
	10		1	0	1	0
	15		1	1	1	1
	20	1	0	1	0	0
	25	1	1	0	0	1

3 Mealy machine to Moore Machine

→ Mealy machine Transition Table (given)

current State	Input Symbol			
	a		b	
	Next State	output	Next State	output
q_0	q_1	1	q_3	1
q_1	q_1	0	q_0	1
→ q_2	q_0	1	q_2	0
q_3	q_3	0	q_1	1

Mealy machine diagram

Moore Machine diagram

Moore machine Transition Table

Current state	Next State Input symbol a	b	Output
q_0	q_1	q_31	Y
q_10	q_10	q_0	0
q_11	q_10	q_0	1
q_2	q_0	q_2	0
q_30	q_30	q_11	0
q_31	q_30	q_11	1