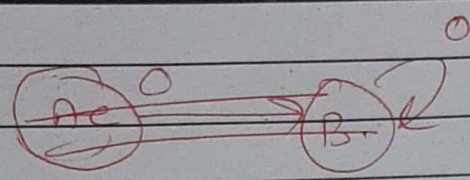
Q#1 Section C Quiz solution



states	0	1
− AC	B	AC
B	B	D
D	B	E
+ E	B	AC

Equivalen 0 => {AC, B, D} {E}

Equivalence 1 => {AC, B} {E} {D}

Equivalence 2 => {AC} {B} {D} {E}

DFA can not be minimized, so the same DFA would be considered.

P_1 P_2

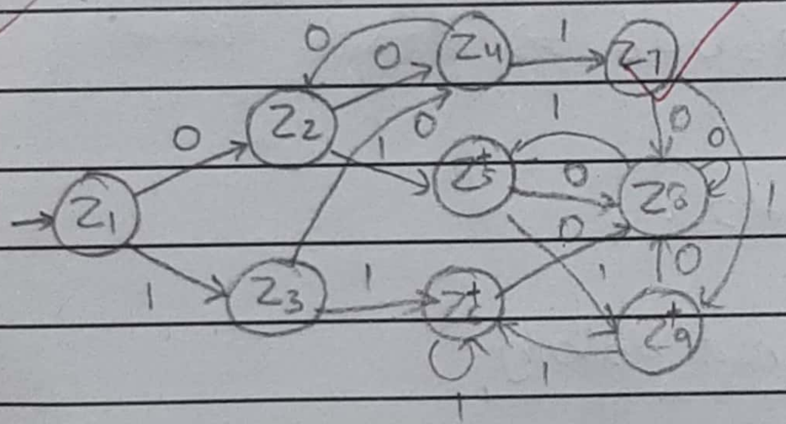
{B}, {AC, E} {D}

Consideing a=0 b=1 from fig ②

Q2.

States	0	1
(AC, q_0) Z_1	(B, q_1) Z_2	(AC, q_3) Z_3
(B, q_1) Z_2	(B, q_2) Z_4	(D, q_4) Z_5
(AC, q_3) Z_3	(B, q_2) Z_4	(AC, q_4) Z_6
(B, q_2) Z_4	(B, q_1) Z_2	(D, q_1) Z_7
+ (D, q_4) Z_5	(B, q_4) Z_8	(E, q_4) Z_9
+ (AC, q_4) Z_6	(B, q_4) Z_8	(AC, q_4) Z_6
(D, q_1) Z_7	(B, q_4) Z_8	(E, q_4) Z_9
(B, q_4) Z_8	(B, q_4) Z_8	(D, q_4) Z_5
+ (E, q_4) Z_9	(B, q_4) Z_8	(AC, q_4) Z_6

5



a ba ba ba aba This is disproved

Q#3

⇒ ww, $w \in \{a, b\}^*$

assume word is $a^n b^n$

then $w \cdot w$ would be ~~to~~ $a^n b^n a^n b^n$.

Now assume $n = 4$ (the pumping length).

aaaa bbbb aaaa bbbb ⇒ Sample word

Division is x, y and z.

$\underbrace{aaa}_{x}\underbrace{a}_{y}\underbrace{bbbb\,aaaa\,bbbb}_{z}$

when we pump y (zero times)

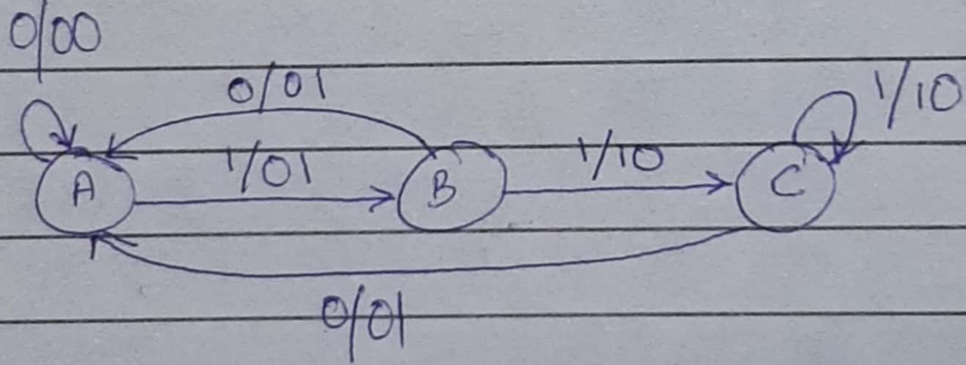
xy^0z. aa bbbb aaaa bbbb

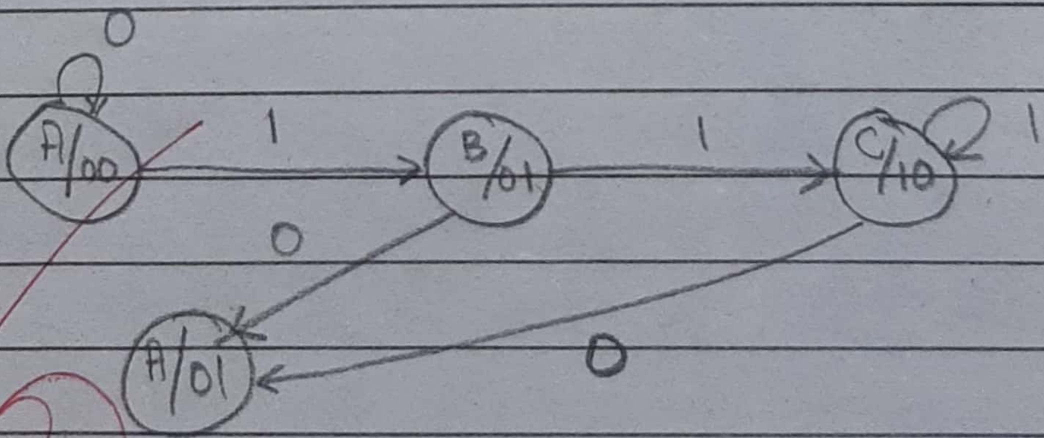
this is not the part of $a^n b^n a^n b^n$

So this disproved that ww is
regular language.

Serial No.________ Student ID________ Continuation Sheet________

Q4





3