1. Yes w ~~b~~ is in L(G)

The final triangular table looks like -

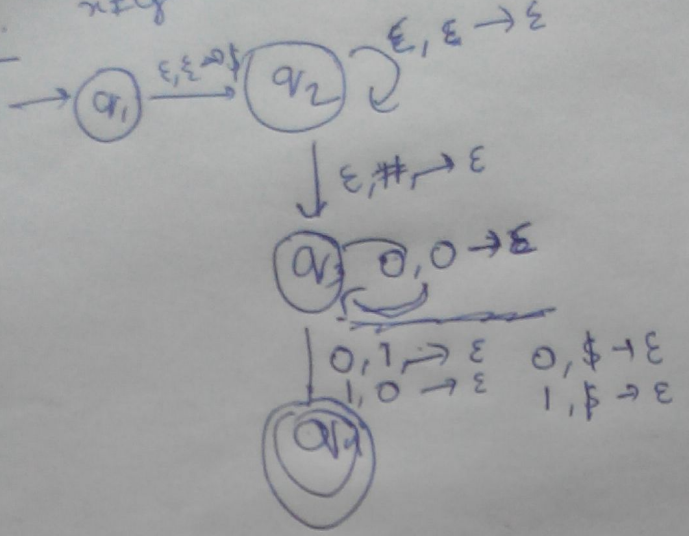
{S,A,C}	← $X_{1,5}$			
ϕ	{S,A,C}			
ϕ	{B}	{B,}		
{S, A}	{B}	{S, C}	{S,A}	
{B}	{A,C}	{A, C}	{B}	{A,C}
b	a	a	b	a

Since we see S in X_{15}, w is in L(G).

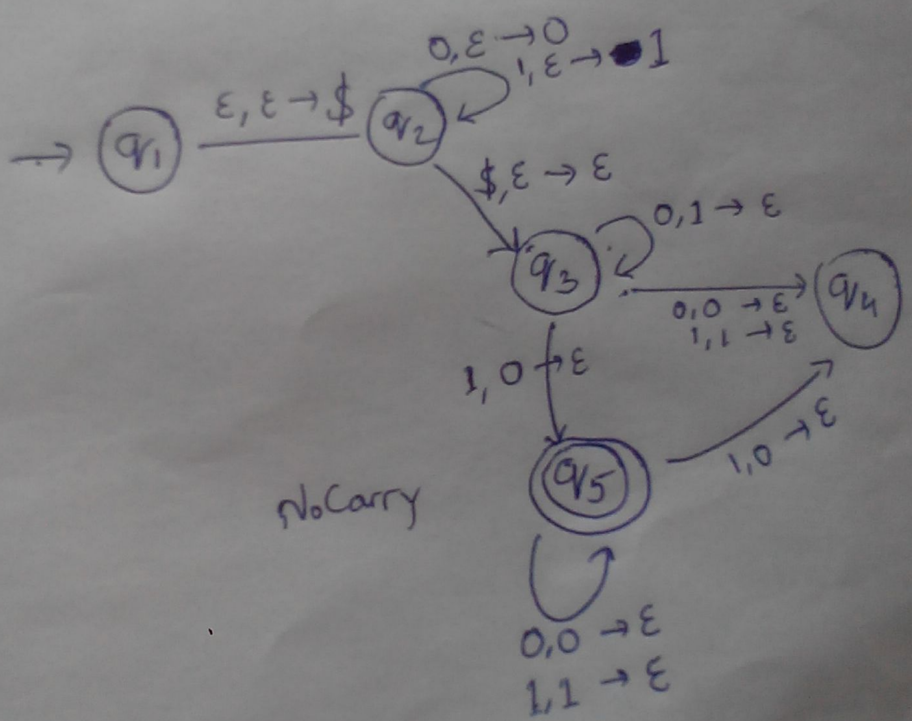
$\{0,1\}^*$

$x\#y$ $x \neq y$

Ans 1



Ans 2.



L is a union of L_1, L_2, L_3, L_4, L_5

$L_1 = \{w \in \{a,b,c\}^* \mid \#_c(w) \neq 1\}$

$L_2 = \{x_1 c x_2 \mid x_1, x_2 \in \{a,b\}^*, |x_1| < |x_2|\}$

$L_3 = \{x_1 c x_2 \mid x_1, x_2 \in \{a,b\}^*, |x_1| > |x_2|\}$

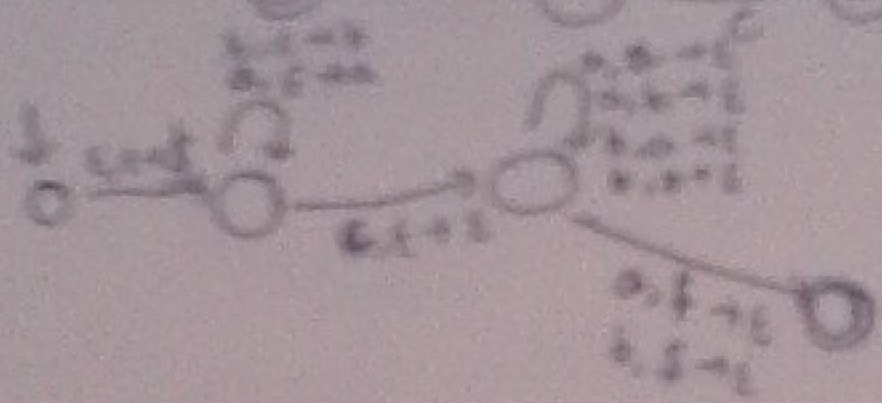
$L_4 = \{x_1 a y_1 c x_2 b y_2 \mid x_1, x_2, y_1, y_2 \in \{a,b\}^*, |x_1| = |x_2|\}$

[illegible] $|x_1| = |x_2|$ = position 1st difference comes

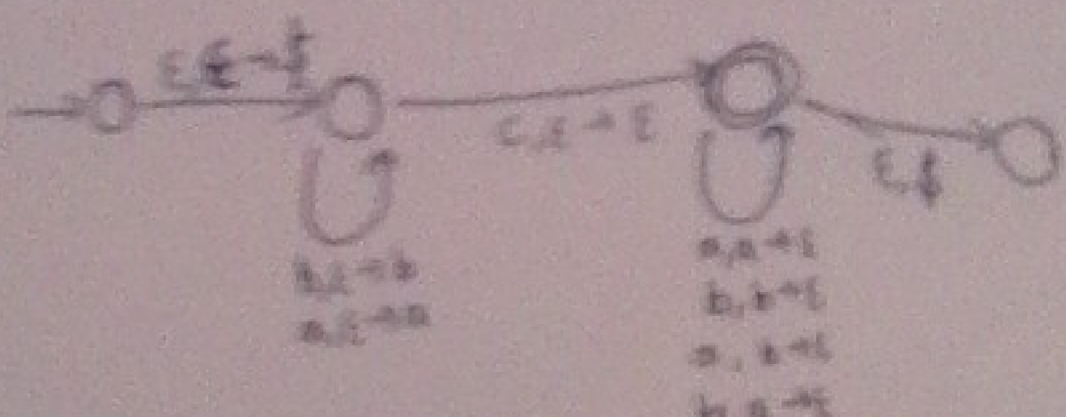
$L_5 = \{x_1 b y_1 c x_2 a y_2 \mid x_1, x_2, y_1, y_2 \in \{a,b\}^*, |x_1| = |x_2|\}$

L_1 Regular Lang.

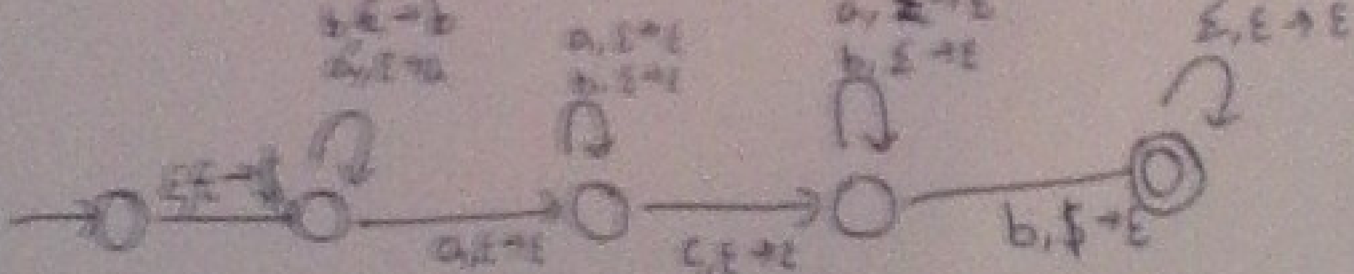
L_2



L_3



L_4



L_5 is similar to L_4