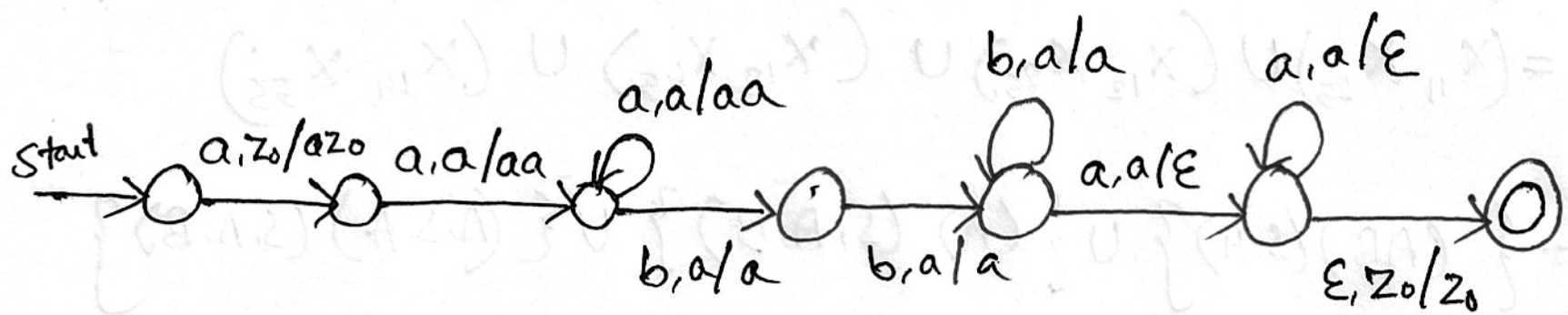


## Ans to Q No - 5



## Ans. to Q No - 4 (a)

A, S				
A, S	A, S			
A, S	A, S	S, A, B		
A	S, A	S, A, B	S, A, B	
A, B	S, A	A, B	A, B	A, B
a	b	a	a	a

Yes, the string 'abaaa' belongs to the language  
as S is present in the 1,5 box.

4(b)

$$X_{1,5} = (X_{11} X_{25}) \cup (X_{12} X_{35}) \cup (X_{13} X_{45}) \cup (X_{14} X_{55})$$

$$= \{ (A,B)(S,A) \} \cup \{ (A)(S,A,B) \} \cup \{ (A,S,A)(S,A,B) \} \\ \cup \{ (A,S)(A,B) \}$$

$$= AS, \textcircled{AA}, BS, BA, AS, AA, \textcircled{AB}, AS, AA, AB, SS, SA, \\ SB, AA, AB, SA, SB$$

$$= A, S$$

$$X_{2,5} = (X_{22} X_{35}) \cup (X_{23} X_{45}) \cup (X_{24} X_{55})$$

$$= \{ (S,A)(S,AB) \} \cup \{ (S,A), (S,A,B) \} \cup \{ (A,S)(A,B) \}$$

$$= \cancel{SS}, SA, SB, AS, AA, \cancel{AB}, SS, SA, SB, AS, AA, AB, \\ AA, AB, SA, SB$$

$$= A, S$$

$$X_{3,5} = (X_{33} X_{45}) \cup (X_{34} X_{55})$$

$$= \{ (A,B)(S,A,B) \} \cup \{ (S,A,B)(A,B) \}$$

$$= \cancel{AS}, AA, AB, BS, BA, BB, SA, SB, AA, AB, BA, BB$$

$$= S, A, B$$