Q1 Consider the following switching ne twork s hown. Let A_1, A_2, A_3, a nd A_4 denote t he events that the associated switches a re closed (connecting). Let A_{ab} denote the event that there is a closed p ath between terminals a and b. (i.e $A_{ab} closed$)

a) Express A_{ab} in terms of A_1, A_2, A_3, and A_4

b) If a ll s witches a re independent a nd the pr obability of be ing closed is 0.5. That is $P(A_1) = P(A_2) = P(A_3) = P(A_4) = 0.5$. Find $P(A_{ab})$. *i.e P(path between a and b is closed (connecting))*
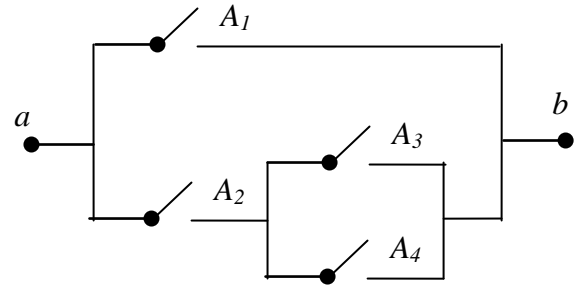
Q2 Consider a communication system with two transmitted symbols 0 and 1. Define events Bi and Ai, i=1 and 2, to represent symboles after and before the channel, respectively. Assume channel transition probabilities are all equal at P(Bi/Aj)=0.1, i≠j, while symbol 0 transmission probability P(A0)=0.4.

a. What is symbol 1 transmission probability P(A1)?
b. What is the transition probability P(Bi/Aj) for i=j?
c. Sketch the tree diagram and put all labels.
d. What is the received symbol probability P(B1)?
c. What is the posteriori probability of A1 transmitted given that B1 is received?