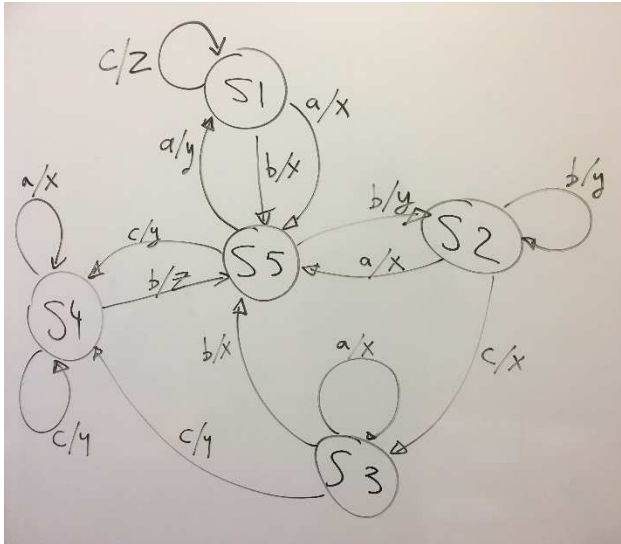# Protocol Testing – Exercises

Test Generation – W, UIO, CTL

1- Consider this below illustrated FSM.

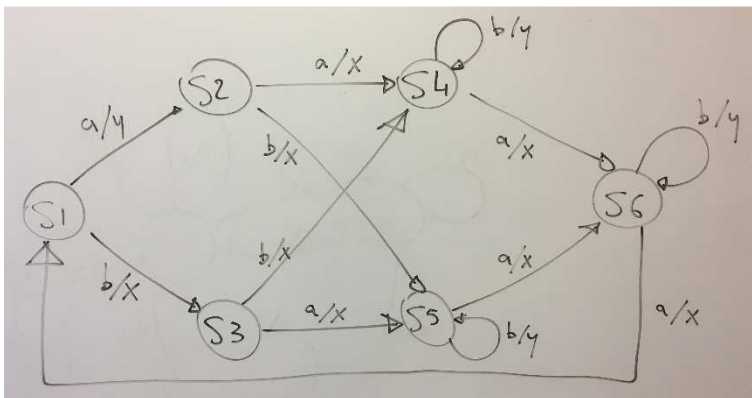   a. Find the W set and the (P)UIO sequence for all states.

Input={a,b,c}

Output={x,y,z}

Initial state : S1

    b. From the previous question and the strategy of your choice, determine a TS for (S2, b/y, S2).
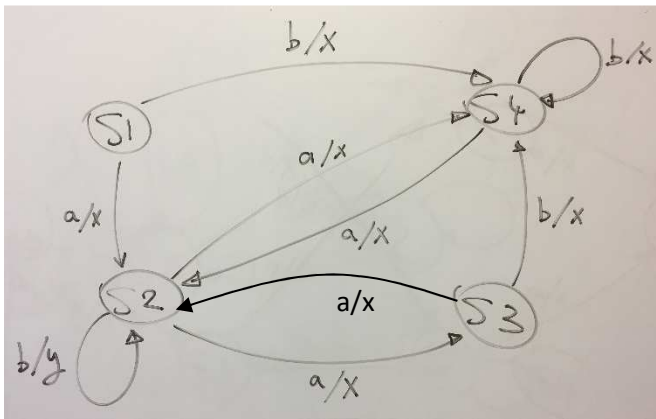
2- Consider this below illustrated FSM.

Input={a,b}

Output={x,y,z}

Initial state : S1

    a. Find the W set and the (P)UIO sequence for all states.

    b. From the previous question and the strategy of your choice, determine a TS for (S1, a/y, S2).
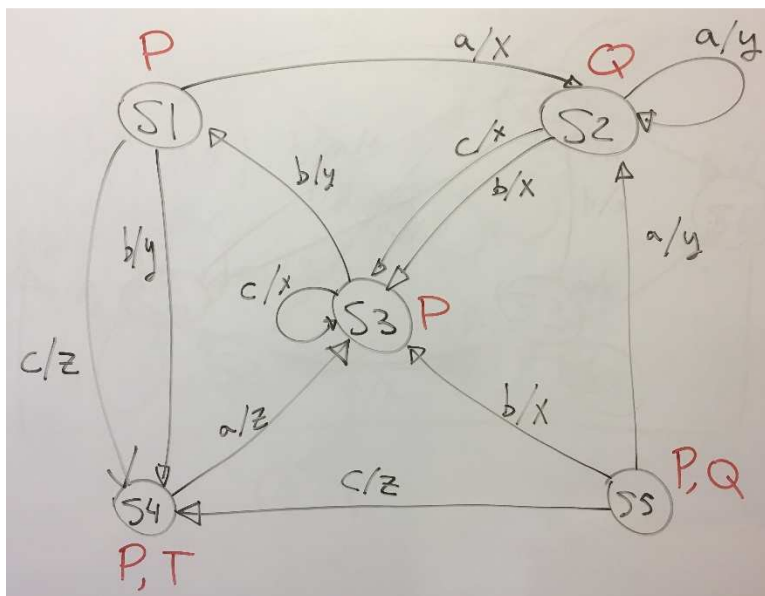
3- Consider this below illustrated FSM.

Input={a,b}

Output={x,y,z}

Initial state : S1

    a. Determine a DS (if it does not exist, use a W approach) for this state machine.

    b. Using the above used strategy, write a TS for (S2, b/y, S2).

    c. After the execution of such a TS, the Test System answers: *NULL, y, y, x, x.* What would be the testing verdict?

4- Consider this below illustrated FSM.

Input={a,b,c}

Output={x,y,z}

Initial state : S1

    a. Determine the (P)UIO of all states.

    b. Using the previous question, write a TS for (S3,b/y,S1) and (S5,a/y,S2).

    c. The red labels are atomic propositions used for labelling functions in Kripke models. Based on that state machine and the atomic propositions, write 3 properties in CTL of type: safety, fairness, liveness (vivacity).

    d. Determine if these properties are true or false in the models. Please justify!

        i.   EGP

        ii.   AGP

        iii. EF(P∧Q)

        iv. AG(P⟹AFT)

        v.   EG(P⟹AFT)

        vi. EF(T⟹EXT)

        vii. AF(Q⟹AXQ)

        viii.