Quiz 3
(March 15th @ 5:30 pm)

Problem 1 (30 pts)
- Complete the timing diagram of the circuit whose VHDL description is shown below:

```vhdl
library ieee;
use ieee.std_logic_1164.all;

entity circ is
    port (rstn, a, b, x, clk: in std_logic;
          q: out std_logic);
end circ;

architecture xst of circ is
    signal qt, f: std_logic;
begin
    f <= a xor b;
    process (rstn, clk, a, b, x)
    begin
        if rstn = '0' then
            qt <= '0';
        elsif (clk'event and clk = '1') then
            if x = '0' then
                qt <= qt or f;
            end if;
        end if;
    end process;
    q <= qt;
end xst;
```

Problem 2 (30 pts)
- Complete the timing diagram of the following state machine:

Problem 3 (40 pts)
- Complete the timing diagram of the following circuit. $Q = Q_3Q_2Q_1Q_0$