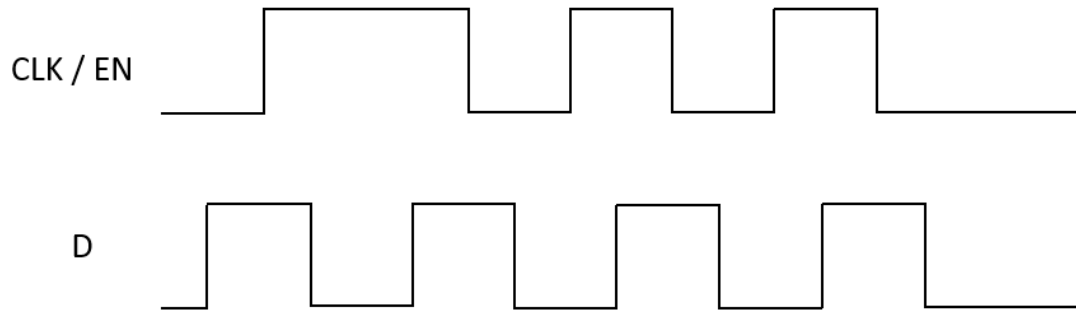


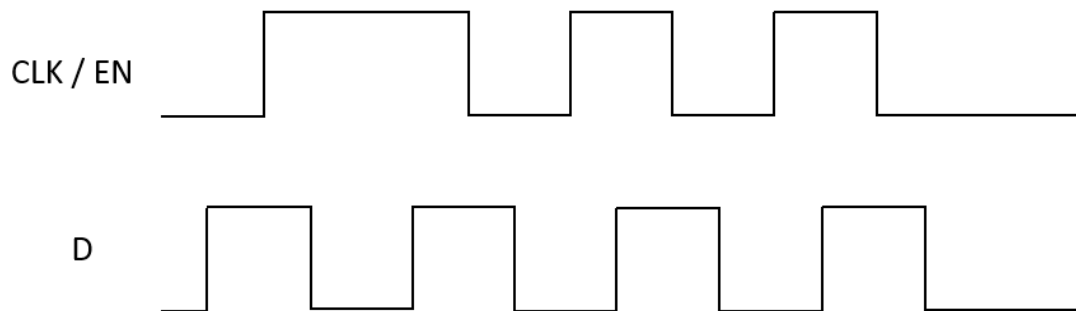
Quiz 1

Name: _____

1. (2 pts) Given the input waveforms shown below, sketch the output Q of a D latch.

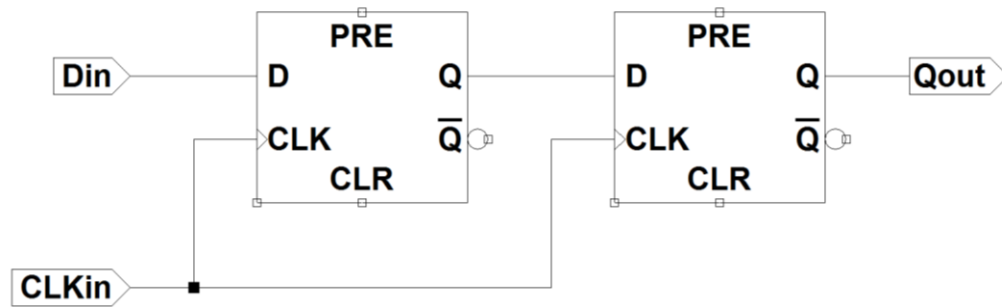


2. (2 pts) Using the same input waveforms from problem 1, sketch the output Q of a D flip-flop.



Quiz 1

3. For both flip-flops in the circuit below, the setup time is 1nsec, the hold time is 0nsec, and the propagation delay is 10nsec.



a. (3 pts) Draw a timing diagram showing two clock periods, the data input Din, and the data output Qout. Assume a clock period of 25nsec. Label all delays in nsec.

b. (3 pts) Can data be reliably clocked through this circuit for a clock frequency of 50MHz? Draw a timing diagram to explain your answer, labeling all delays in nsec.