

Quiz 3 – EECS 270, Spring '12

Name: _____ unique name: _____

Honor code:

I have not given or received aid on this quiz, nor have I observed anyone else doing so:

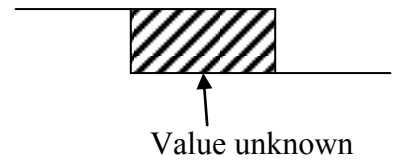
Sign here: _____

This quiz is graded out of 100 points and is worth about 3% of your class grade. You will have **20** minutes for this quiz. ***Closed everything including calculators!*** To receive partial credit, work must be shown.

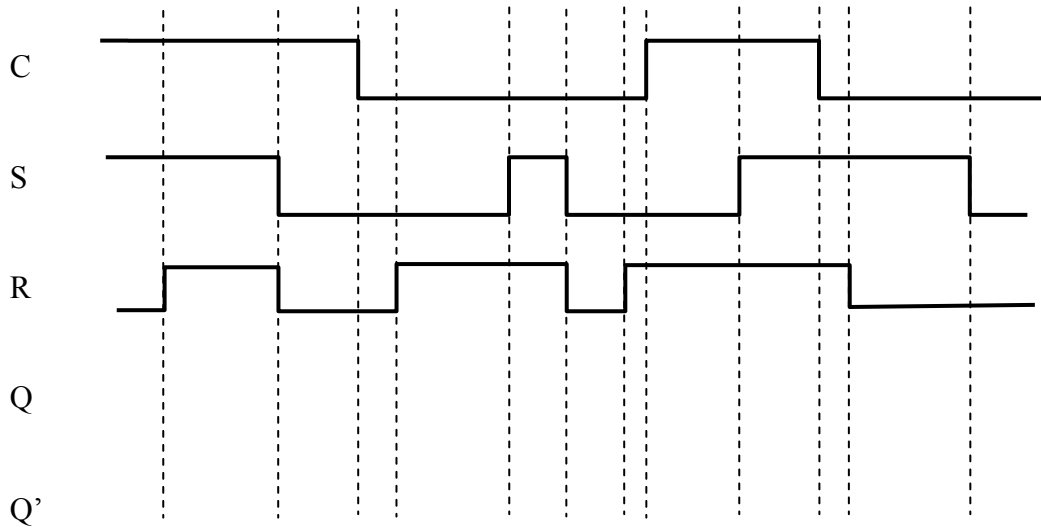
1. Find the ***minimal product-of-sums*** for $F = \Sigma_{abcd}(1,5,6,7,11,12,13,15)$ using a K-map. Show your work. **[45]**

2. Consider a memory device that has 4096 (2^{12}) addresses each 4 bits in size. If this was made out of a square memory (equal number of rows and columns in the memory device) the row decoder would have _____ inputs while the column MUX would have _____ selection bits. **[15]**

3. Complete the following timing diagrams. If the value is unknown (or oscillating) at some point, clearly indicate that with hashes (as shown). Each Q value will be graded as either right or wrong (no partial credit on a given Q value).



- a) Complete the timing diagram below for an SR latch with enable. [20]



- b) Complete the timing diagram below for both a D latch and a D flip-flop. [20]

