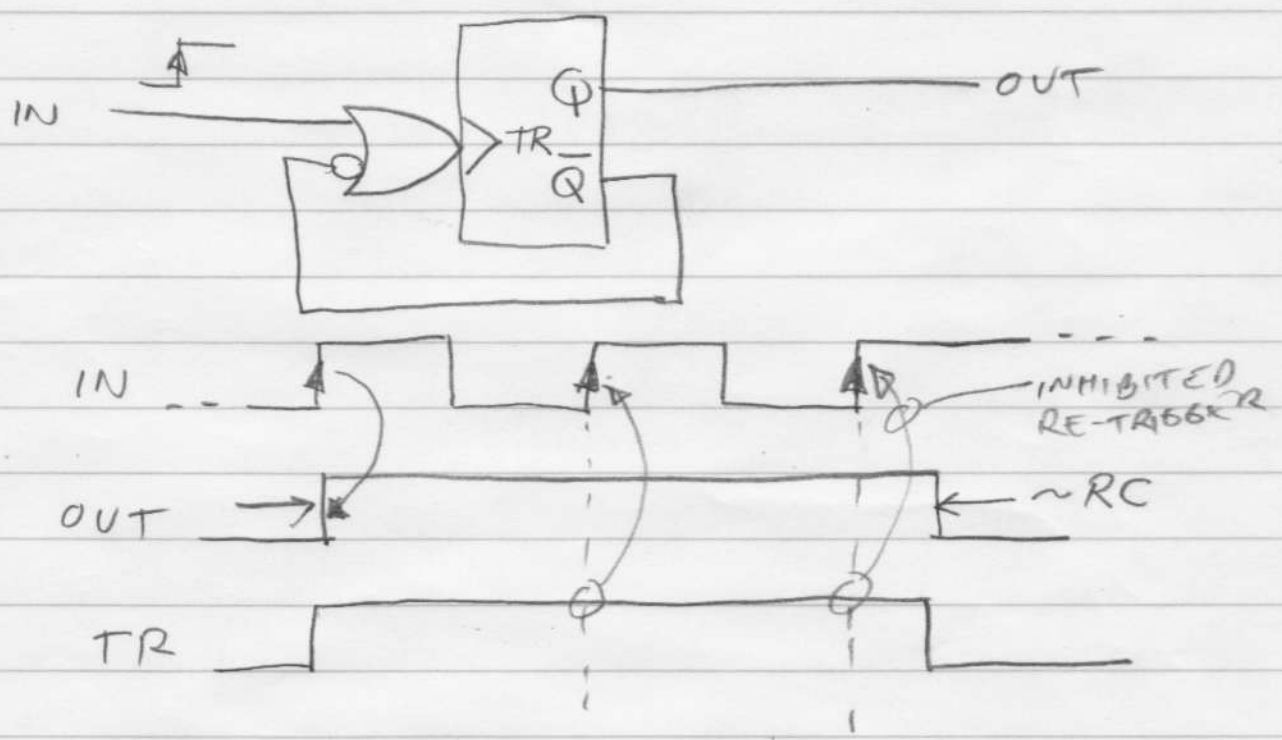


PHYSICS 335 - SPRING QUARTER 2012  
HOMEWORK 3 SOLUTIONS V1.0

1. SEE P. 518 (AT UPPER LEFT) IN  
H & H TEXT.

CD 4538 "ONE-SHOT"



2. LOOKING AT THE DATASHEET (MOTOROLA LS),  
LOOK AT THE FIGURE OF OUTPUT PULSE-WIDTH  
VS. CAPACITANCE (AT SEVERAL VALUES OF  
RESISTANCE). NOTICE: AS  $C \rightarrow 0$ , THE  
PULSE-WIDTH APPROACHES A CONSTANT; THIS  
IS DUE TO "STRAY" CAPACITANCE AT THAT  
PIN. APPROXIMATELY, THE PULSE-WIDTH  
IS 100 NS.

IF YOU WANT MORE FUN:

- 1) MAKE AN INFERENCE AS TO THE VALUE OF THE STRAY CAPACITANCE;
- 2) DOES THIS VALUE SEEM REASONABLE?

3. AGAIN, LOOK AT THE DATASHEET.

NOTICE THERE'S AN INTERNAL RESISTOR OF VALUE  $\sim 10k\Omega$ . WITH THAT TIMING FIGURE AS IN QUESTION 2, TAKING  $C \rightarrow 0$ , THE PULSE-WIDTH AGAIN IS APPROXIMATELY 100NS.