

# Physics 2250: Problem Set VIII

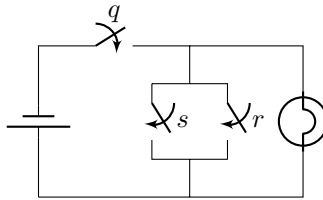
Jeremy Favro

November 11, 2024

**Problem 1.** Design a simple circuit comprising only a battery, a bulb (load), and simple switches, where the bulb lights up only when  $q \cdot \overline{(r + s)}$  is true

**Solution 1.**

a) Here if  $q$  is closed and either  $r$  or  $s$  is also closed, the bulb is bypassed. If  $q$  is open obviously no current reaches the bulb. If both  $r$  and  $s$  are open (ergo  $\overline{(r + s)} = 1$  only true when  $r, s = 0$ ) the lamp sees current and turns on.



b)