



first two letters of last name

## Physics 7B - Winter 07 - Quiz 8

Name \_\_\_\_\_ Student ID \_\_\_\_\_

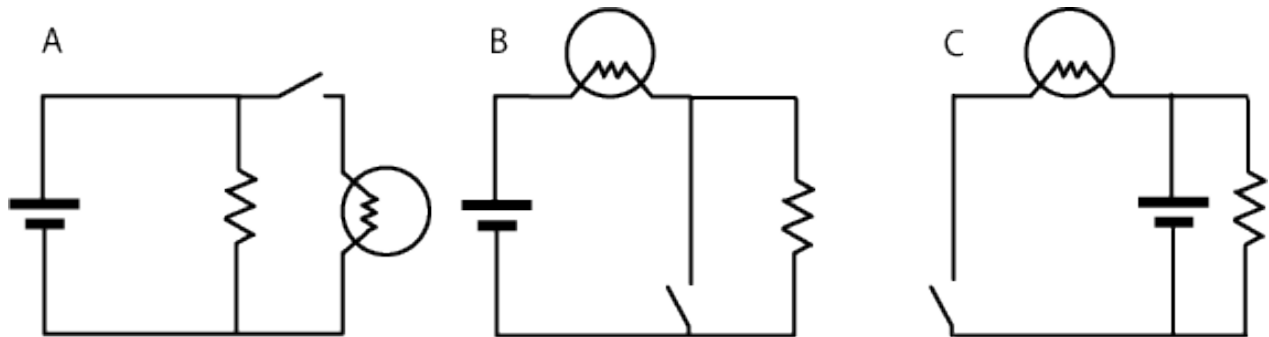
DL section number \_\_\_\_\_

I certify by my signature that I will abide by the code of academic conduct of the University of California

Signature \_\_\_\_\_

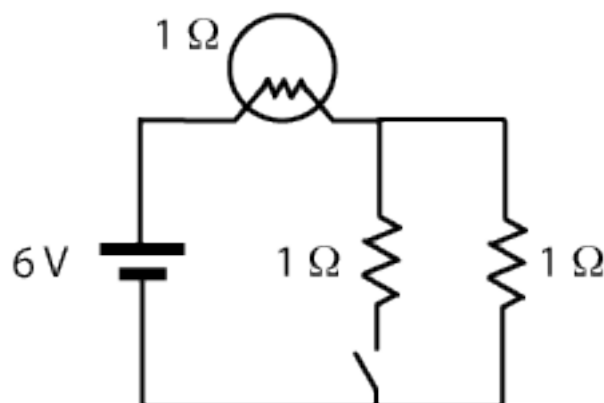
**No books or notes. Calculators OK. Show all of your work below - answers alone do not receive credit!**

For each of the following circuits labelled A, B, and C, there is a light bulb and a resistor and a switch. When the switch is open (off) no current can flow through the switch. The resistance of the light bulb is equal to that of the resistor.



1. (2.5 pts) For the switches in circuits A, B, and C, which combination of off/on results in the least total amount of light given off by the light bulbs, added together?

2. (2.0 pts) For the circuit below, find the power given off by the light bulb for the two cases of switch open (off), and switch closed (on), in watts.



## Physics 7B – Winter 2007 – Quiz 8 Rubric

### Question 1:

Q - 2.5	Correctly stated all three switches should be off (open) with an appropriate justification using the model.
R - 2.5	Correctly stated all three switches should be off (open), but had a minor error in the explanation.
S - 2.5	Correctly stated all three switches should be off (open), but had difficulties with the explanation (i.e. had several minor errors, a major error, or an explanation that was incomplete or unclear). Solutions in this category demonstrated some attempt at applying the model.
T - 0.5	Incorrect combination of on/off for the switches, but clearly explained the answer in terms of the model.
U - 0.0	Incorrect combination of on/off for the switches with a weak explanation or several errors in reasoning.
V - 2.5	Correct answer with no explanation or with nothing relevant to the model mentioned.
W - 0.0	Incorrect answer with no explanation or with nothing relevant to the model mentioned.

### Question 2:

Q - 2.0	Correctly calculated $P_{\text{open}} = 9 \text{ W}$ and $P_{\text{closed}} = 16 \text{ W}$ for the light bulb and showed supporting calculations.
R - 1.5	Q, with a minor math error.
S - 1.5	Q, with a minor physics error. Examples of an S answer are as follows: <ul style="list-style-type: none"> <li>• Calculated the total power instead of the power dissipated by the light bulb.</li> <li>• Miscalculated the equivalent resistance in the “closed” case.</li> <li>• Used the incorrect equation for power.</li> </ul>
T - 1.0	Two S-type errors.
U - 1.0	More than two S-type errors, but both cases (open and closed) were attempted.
V - 1.0	Only one case was attempted (or both cases were treated as the same), but the one case was correct.
W - 0.5	V, with an error
X - 0.0	Something was attempted, but little or no progress was made.
Z - 0.0	Blank or effectively blank.