OSU Academic Integrity Statement

During this quiz you are not to receive information, nor communicate with anyone, about the form, content, length, or difficulty of this quiz. Additionally, you are not to use any unauthorized resources while taking this quiz.

The allowed resources are: any notes you have collected during this course (handwritten, printed, or saved locally on your computer), blank sheets of paper or a digital tablet, writing utensil, a ruler, a protractor, and a non-communicating calculator. **Accessing the internet** while taking the quiz for any reason other than downloading, viewing, or turning in the quiz **is strictly prohibited**.

Receiving information or discussing details about this quiz between the time of its release and a time 48 hours later is stickily prohibited and is in violation of Oregon State University's Code of Student Conduct.

https://studentlife.oregonstate.edu/studentconduct/academicmisconduct

Any incidence of academic misconduct will be dealt with in accordance with Oregon State University's policies.

By submitting your work to Gradescope, you are stating that you have abided and will abide by the rules stated here and the academic integrity statement found in the syllabus on boxsand.org.

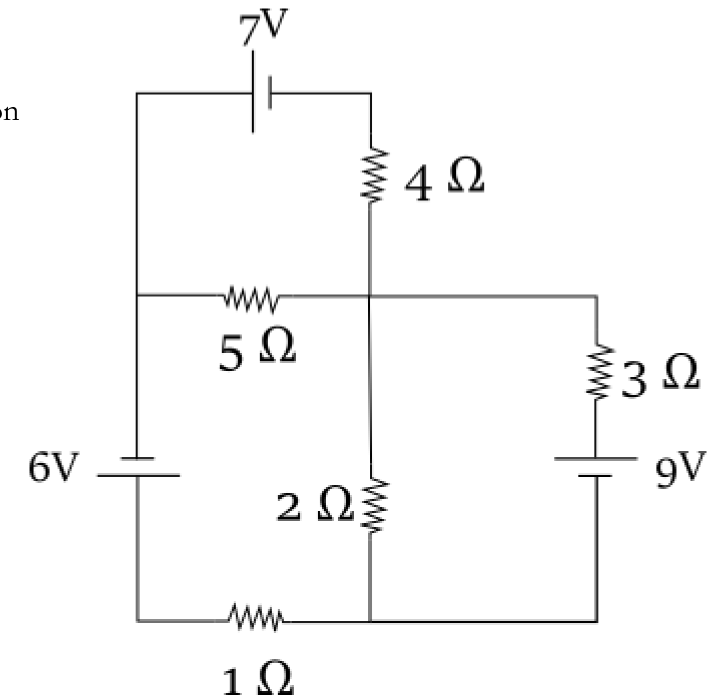
Physics 203

Week 09 quiz | Corvallis

5/26/2021

Collaboration is not allowed. You will have 25 minutes to download this PDF, solve, take pictures, AND upload this exam to Gradescope. You will have an additional 5 minute buffer in case technological issues arise.

Consider the circuit with constant voltage sources and resistors only. In the parts below, you will not need to solve for any unknown values. You will need to answer the questions that may involve writing algebraic expressions.



(a) How many unique values of current (i.e. how many unknowns) are there in this circuit? Clearly label each current on the circuit with a unique variable (e.g. I_1, I_2, etc…) and be sure to indicate your choice for current direction. You will not be graded on choice of current direction, but make sure to be consistent with your choices when answering parts (b) and (c).

(b) Write out the equations for current at each junction consistent with your choice of current directions from part (a)

(c) Identify the minimum number of voltage loops required to account for each circuit element. For each loop, create an expression that could be used in addition to the junction equations in part (b) to solve for the unknown currents. Remember, you do not have to solve for the currents, simply produce a set of equations that could be used to solve for the unknown currents. Label each loop and direction on the diagram so that each loop equation can be identified on your circuit clearly.