

Exam 2 – v1  
Physics 2760  
FS 2013

Lab Section

Last Name \_\_\_\_\_

First Name \_\_\_\_\_

ID # \_\_\_\_\_

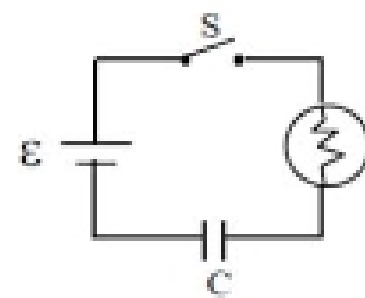
*Soluhious*

This is a closed book exam. I understand, pursuant to University Regulations on academic honesty, that I am not to use any notes or information other than what is in the official, non-annotated formula sheet.

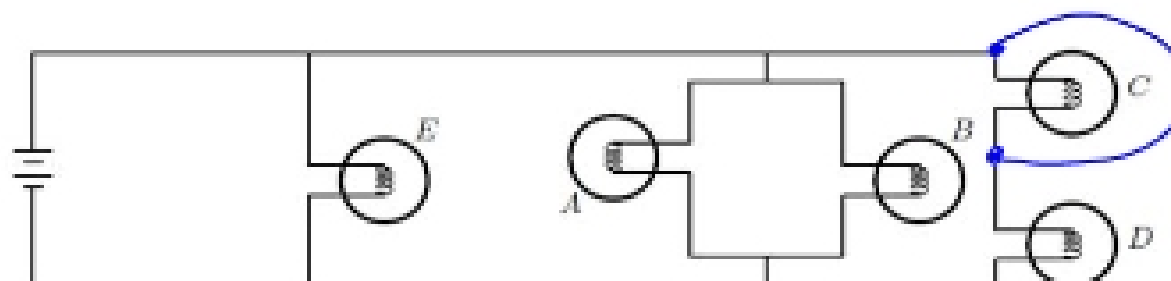
Signature \_\_\_\_\_

- For multiple choice questions, please make sure that you **circle the letter for the answer which you believe to be correct and only that answer**. If more than one answer is circled for the same problem, you will not receive credit for it.
- For full credit show your work for solutions to questions that require calculations. Write the equation from where you start to solve the problem and show your math flowing from it for full credit. **No shown work, no credit!**
- Surround your final answer with a box and make sure you include units for your final answer, otherwise you will be penalized!
- Don't get hung up on questions. If you find yourself spending too much time on a question, skip it and come back to it later. **Relax, read carefully, think – and then read everything again.**
- During the exam, if you have questions please raise your hand and the instructor will come to you and provide help.
- **The last page is the formula sheet.** Feel free to tear it off. You may keep the formula sheet after the exam.

1. (2 points) The circuit below contains a battery, a capacitor, a bulb and a switch. The switch is initially open as shown in the diagram, and the capacitor is uncharged. Which correctly describes what happens to the bulb when the switch is closed?
- A. The bulb is dim and remains dim.
  - B. At first the bulb is dim and it gets brighter and brighter until its brightness levels off.
  - C. The bulb is bright and remains bright.
  - D. At first the bulb is bright and it gets dimmer and dimmer until it goes off.
  - E. None of these is correct.

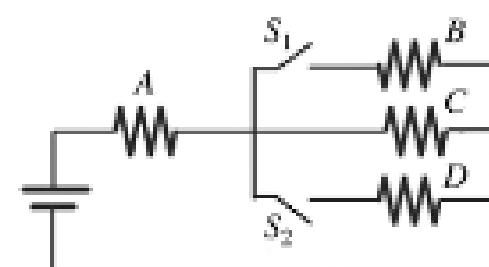


Questions 2, 3, and 4 refer to the same scenario: A circuit is wired up with 5 identical light bulbs and connected to a source of EMF. In the diagram, any point where the connecting wires form a T is considered a junction. Now bulb C is replaced with a simple wire.

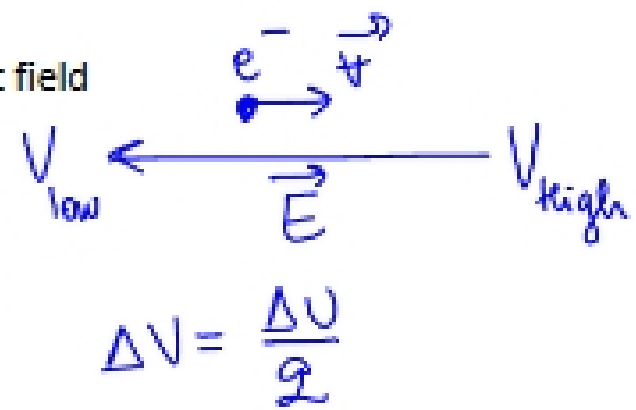


2. (1 point) What happens to the brightness of bulb A? (circle one)
- increases                      decreases                       does not change
3. (1 point) What happens to the brightness of bulb D? (circle one)
- increases                      decreases                      does not change
4. (1 point) What happens to the brightness of bulb E? (circle one)
- increases                      decreases                       does not change

5. (2 points) In the circuit shown in the figure, four identical resistors labeled A to D are connected to a battery as shown.  $S_1$  and  $S_2$  are switches. Which of the following actions would result in the GREATEST amount of current through resistor A?
- A. closing both switches
  - B. closing  $S_2$  only
  - C. closing  $S_1$  only
  - D. leaving both switches open as shown.



6. (2 points) For an electron moving in a direction opposite to the electric field
- A) its potential energy increases and its electric potential decreases.
  - B) its potential energy decreases and its electric potential increases.**
  - C) its potential energy increases and its electric potential increases.
  - D) its potential energy decreases and its electric potential decreases.
  - E) both its potential energy and its electric potential remain constant.



7. (2 points) The equipotential surfaces between two spherical conductors are shown in Figure 20-2, with the value of the potential marked for each line. What is the direction of the electric field at point F?
- A) towards E
  - B) towards G**
  - C) towards A
  - D) towards D
  - E) none of the above

