

**WebAssign**  
**CH20-HW01-FALL2010 (Homework)**

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 PHYS 272-FALL 2012, Fall 2012  
 Instructor: Virendra Saxena

**Current Score :** 12 / 12      **Due :** Tuesday, October 23 2012 11:59 PM EDT

**The due date for this assignment is past.** Your work can be viewed below, but no changes can be made.

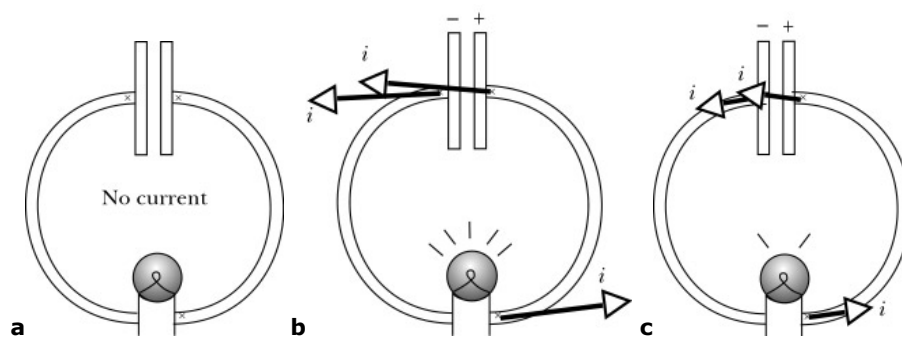
**Important!** Before you view the answer key, decide whether or not you plan to request an extension. Your Instructor may *not* grant you an extension if you have viewed the answer key. Automatic extensions are not granted if you have viewed the answer key.

[View Key](#)

 1. 3/3 points | [Previous Answers](#)

MI3 20.1.X.032.alt01

When a particular capacitor, which is initially uncharged, is connected to a battery and a small light bulb, the light bulb is initially bright, but gradually gets dimmer, and after 45 seconds it goes out. To make sure the capacitor is fully charged, you wait another 45 seconds. Now you remove the battery from the circuit, and connect the capacitor to the lightbulb. The diagrams below show the electron current in the circuit at three different times (0.01 s, 8 s, and 240 s) after the connection to the bulb is made. Which diagram best represents the state of the circuit at a time **about 240 seconds** after connecting the wires?



- ☒ diagram a
- ☐ diagram b
- ☐ diagram c

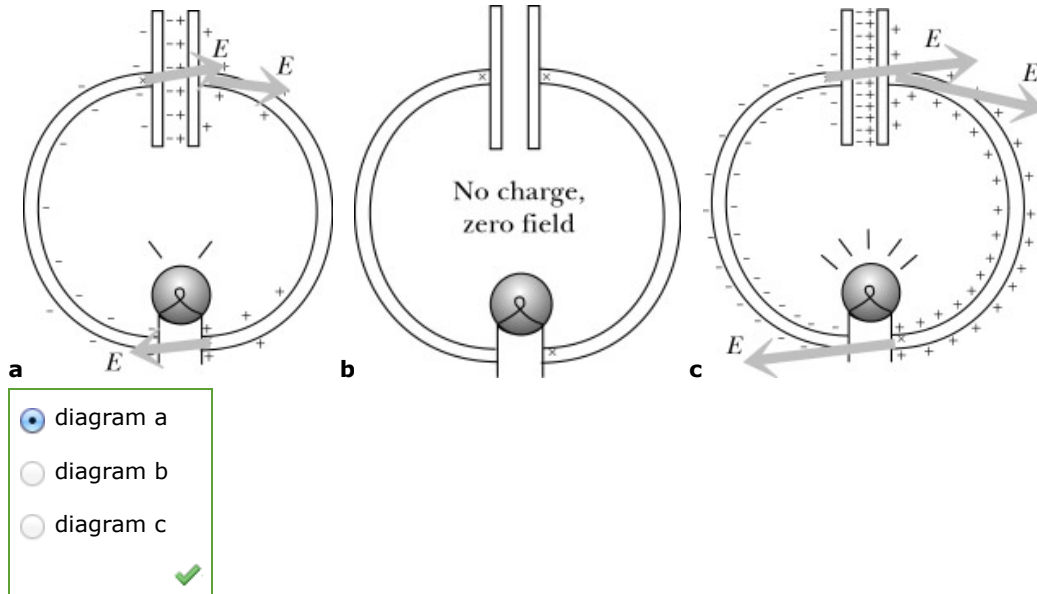


- [Read the eBook](#)
- [Section 20.1](#)

2. 3/3 points | [Previous Answers](#)

MI3 20.1.X.032.alt02

When a particular capacitor, which is initially uncharged, is connected to a battery and a small light bulb, the light bulb is initially bright, but gradually gets dimmer, and after 45 seconds it goes out. To make sure the capacitor is fully charged, you wait another 45 seconds. Now you remove the battery from the circuit, and connect the capacitor to the lightbulb. The diagrams below show the electric field in the circuit and the surface charge distribution on the wires at three different times (0.01 s, 8 s, and 240 s) after the connection to the bulb is made. Which diagram best represents the state of the circuit at a time **about 8 seconds** after connecting the wires?



- [Read the eBook](#)
- [Section 20.1](#)

3. 3/3 points | [Previous Answers](#)

MI3 20.1.X.031

Which of the following statements about the discharging of a capacitor through a lightbulb are correct?

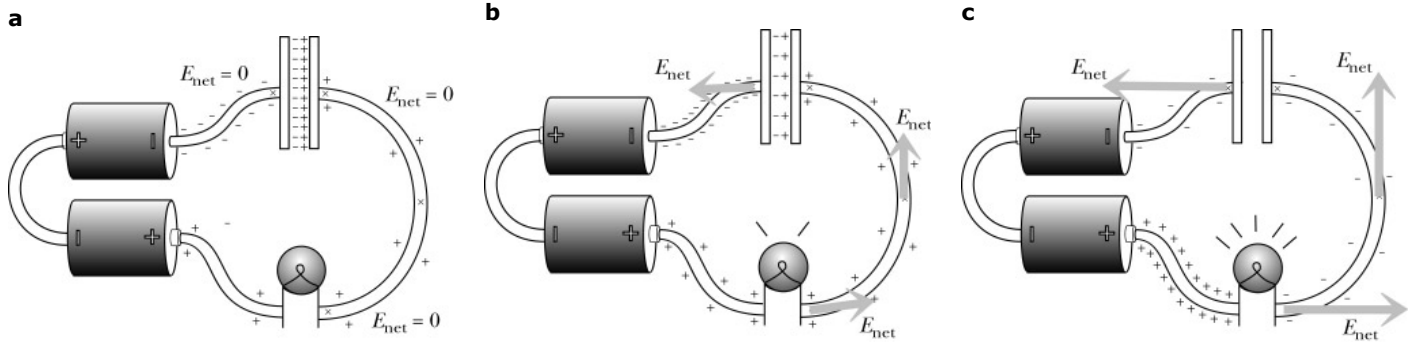
- ☒ The fringe field of the capacitor decreases as the charge on the capacitor plates decreases.
  - ☒ The electric field at a location inside the wire is due to charge on the surface of the wires and charge on the plates of the capacitor.
  - ☐ Electrons flow across the gap between the plates of the capacitor, thus reducing the charge on the capacitor.
  - ☒ Electrons in the wires flow away from the negative plate, toward the positive plate, reducing the charge on the plates.
- A green checkmark is next to the selection box.

- [Read the eBook](#)
- [Section 20.1](#)

4. 3/3 points | [Previous Answers](#)

MI3 20.1.X.032.alt03

When a particular capacitor, which is initially uncharged, is connected to a battery and a small light bulb, the light bulb is initially bright, but gradually gets dimmer, and after 45 seconds it goes out. The diagrams below show the electric field in the circuit and the surface charge distribution on the wires at three different times (0.01 s, 2 s, and 240 s) after the connection to the bulb is made. The diagrams below show the pattern of electric field in the wires and charge on the surface of the wires at three different times (0.01 s, 8 s, and 240 s) after the connection to the battery is made. Which of the diagrams below best represents the state of the circuit at a time **0.01 second** after connecting the circuit?



- ☐ diagram a
- ☐ diagram b
- ☒ diagram c



- [Read the eBook](#)
- [Section 20.1](#)