Conceptual Question 25.01

Part A

If the electric field is zero everywhere inside a region of space, the potential must also be zero in that region.

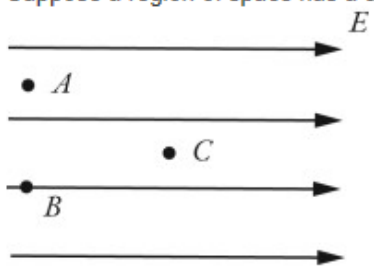
ANSWER:

- True
- False

Conceptual Question 25.06

Part A

Suppose a region of space has a uniform electric field, directed towards the right, as shown in the figure. Which statement about the electric potential is true?



ANSWER:

- The potential at points A and B are equal, and the potential at point C is higher than the potential at point A.
- The potential at all three locations (A, B, C) is the same because the field is uniform.
- The potential at point A is the highest, the potential at point B is the second highest, and the potential at point C is the lowest.
- The potential at points A and B are equal, and the potential at point C is lower than the potential at point A.

Conceptual Question 26.11

Part A

When two or more capacitors are connected in series across a potential difference

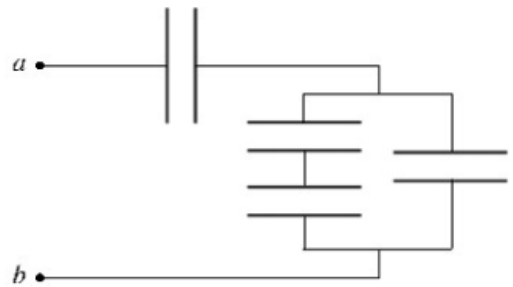
ANSWER:

- the potential difference across the combination is the algebraic sum of the potential differences across the individual capacitors.
- the equivalent capacitance of the combination is less than the capacitance of any of the capacitors.
- each capacitor carries the same amount of charge.
- All of the above choices are correct.
- None of the above choices are correct.

Problem 26.09

Part A

The capacitors in the network shown in the figure all have a capacitance of 5.0 μF. What is the equivalent capacitance, C_{ab} , of this capacitor network?



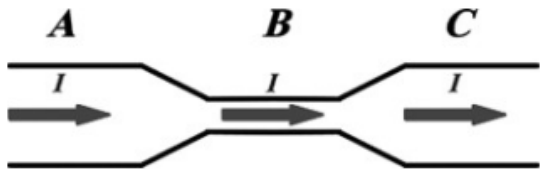
ANSWER:

- 20 μF
- 1.0 μF
- 3.0 μF
- 5.0 μF
- 10 μF

Conceptual Question 27.01

Part A

The figure shows a steady electric current passing through a wire with a narrow region. What happens to the drift velocity of the moving charges as they go from region A to region B and then to region C?



ANSWER:

- The drift velocity remains constant.
- The drift velocity increases from A to B and decreases from B to C.
- The drift velocity increases all the time.
- The drift velocity decreases from A to B and increases from B to C.
- The drift velocity decreases all the time.

Problem 27.20

Part A

A 2.0 mm diameter wire of length 20 m has a resistance of 0.25 Ω. What is the resistivity of the wire?

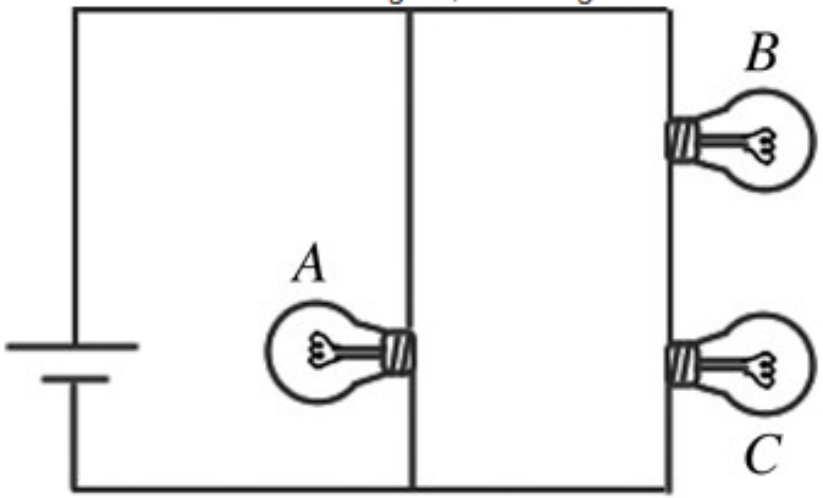
ANSWER:

- 0.25 $\Omega \cdot$ m
- $4.0 \times 10^{-7}\ \Omega \cdot$ m
- $3.9 \times 10^{-8}\ \Omega \cdot$ m
- $16 \times 10^{-8}\ \Omega \cdot$ m
- $5.0 \times 10^{-7}\ \Omega \cdot$ m

Conceptual Question 28.03

Part A

In the circuit shown in the figure, all the lightbulbs are identical. Which of the following is the correct ranking of the brightness of the bulbs?



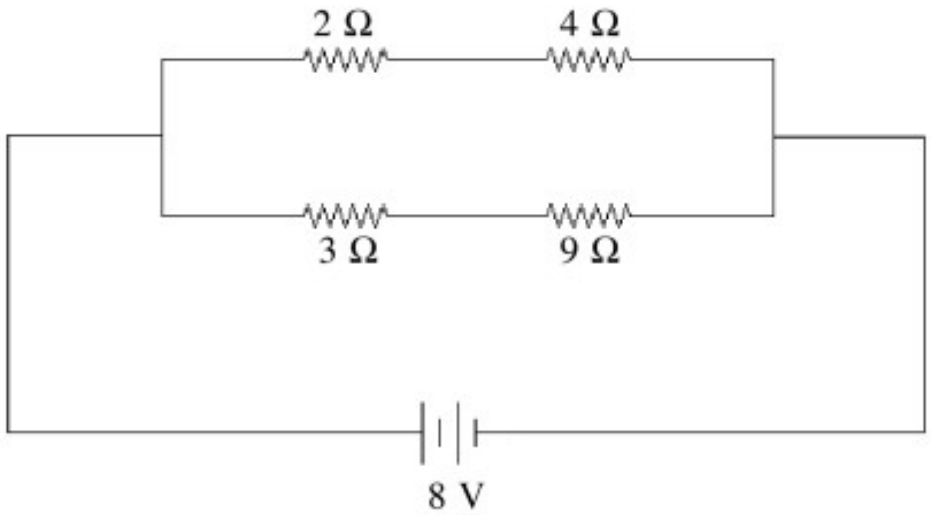
ANSWER:

- A is brightest, C is dimmest, and B is in between.
- A and B have equal brightness, and C is the dimmest.
- A is the brightest, and B and C have equal brightness but less than A.
- B and C have equal brightness, and A is the dimmest.
- All three bulbs have the same brightness.

Problem 28.24

Part A

Four resistors are connected across an 8-V DC battery as shown in the figure. The current through the 9-Ω resistor is closest to



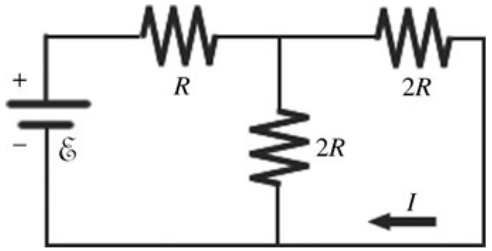
ANSWER:

- 0.5 A.
- 2 A.
- 0.7 A.
- 1 A.
- 0.9 A.

Problem 28.27

Part A

For the circuit shown in the figure, I = 0.50 A and R = 12 Ω. What is the value of the emf ε?



ANSWER:

- 48 V
- 12 V
- 6.0 V
- 18 V
- 24 V

Conceptual Question 26.16

Part A

An ideal parallel-plate capacitor consists of a set of two parallel plates of area A separated by a very small distance d. When the capacitor plates carry charges +Q and -Q, the capacitor stores energy U_0. If the separation between the plates is doubled, how much electrical energy is stored in the capacitor?

ANSWER:

- U_0
- $2U_0$
- $U_0/2$
- $U_0/4$
- $4U_0$