

# Electricity: Capacitors

⚠ This is a preview of the draft version of the quiz

Started: Nov 4 at 10:55am

## Quiz Instructions

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### Question 1

1 pts

Which of the following does NOT affect capacitance?

- the amount of charge available correct
- the type of insulator used between plates
- the surface area of the plates
- the separation of the plates

### Question 2

1 pts

If the surface area of the plates of a capacitor is increased, you expect a \_\_\_\_ in the capacitance. Also, if the separation between the plates is decreased, you would expect a \_\_\_\_ in capacitance.

- decrease, decrease

- decrease, increase
- increase, decrease
- increase, increase

**Question 3****1 pts**

Two conductors have a potential difference of 1500V between them. They have charges of equal magnitude and opposite sign, the magnitude being  $5.00 \times 10^{-6} \text{C}$ . What is the capacitance of this system?

- 0.600 GF
- 3.33 nF
- 0.300 GF
- 1.67 nF

**Question 4****1 pts**

A parallel plate capacitor consists of two circular plates each with a radius 2.00cm and separated by a distance of 0.0200mm. What is the capacitance?

- 0.556 pF

- 177 pF
- 556 pF
- 0.177 pF

**Question 5****1 pts**

Two parallel conducting plates are have a surface area  $A$  and are separated by a distance  $d$ . They are connected to a battery that provides a voltage  $V$ . What will happen to the charge on the plates if the separation is doubled while the battery is connected?

- The charge on the plates will remain constant.
- The charge on the plates will dissipate until they become neutral.
- The charge on the plates will be halved.
- The charge on the plates will double.

**Question 6****1 pts**

How much energy can a capacitor with a capacitance of 125 pF and supporting a voltage of 62.5 V hold?

- $2.44 \times 10^{-7} \text{ J}$

- $2.44 \times 10^{-7} \text{ J}$
- $4.88 \times 10^{-7} \text{ J}$
- $7.21 \times 10^{-7} \text{ J}$

**Question 7****1 pts**

If a pyrex dielectric (dielectric constant of 5.00) is inserted into the capacitor in Question 4 while the voltage is held constant and charge is allowed to flow to or from the plates, what energy can now be stored?

- $4.88 \times 10^{-6} \text{ J}$
- $1.22 \times 10^{-6} \text{ J}$
- $2.44 \times 10^{-7} \text{ J}$
- $2.44 \times 10^{-6} \text{ J}$

**Question 8****1 pts**

A parallel plate capacitor is charged by a battery and then disconnected. If the separation is increased, what effect will this have on the charge and the voltage across the capacitor?

- the voltage and charge both decrease

- the charge will increase and the voltage will remain constant
- the charge will not change and the voltage will decrease.
- the charge will remain constant and the voltage will increase

**Question 9****1 pts**

A parallel plate capacitor is connected to a voltage source and the electric field established between the plates has a magnitude of  $4,000\text{N/C}$ . If the voltage is doubled and the separation between the plates is reduced to  $1/4$  the original distance, what is the magnitude of the electric field now?

- 8,000 N/C
- 16,000 N/C
- 4,000 N/C
- 32,000 N/C

**Question 10****1 pts**

The capacitance of a parallel plate capacitor can be increased by doing which of the following?

- increasing the amount of charge on the plates

- increasing the surface area of the plates

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- connecting the plates to a higher potential difference

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- increasing the separation between the plates

Not saved