

Electric Potential Quiz Answer Key PDF

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Which device uses potential difference to create current?

- A. Resistor
- B. Battery ✓**
- C. Capacitor
- D. Inductor

What is the unit of electric potential?

- A. Newton
- B. Joule
- C. Volt ✓**
- D. Coulomb

Which of the following is a correct formula for electric potential due to a point charge?

- A. $V = Q/4\pi\epsilon_0 r$
- B. $V = kQ/r$ ✓**
- C. $V = W/F$
- D. $V = q/E$

In a uniform electric field, the potential energy of a charge is given by which formula?

- A. $U = qEd$ ✓**
- B. $U = 1/2 mv^2$
- C. $U = kQ/r$
- D. $U = qV$

Electric potential is defined as the work done per unit charge in bringing a charge from where?

- A. A negative plate
- B. Infinity ✓**
- C. A positive plate
- D. The ground

Which of the following surfaces have constant electric potential?

- A. Magnetic field lines
- B. Equipotential surfaces ✓**
- C. Electric field lines
- D. Gravitational field lines

What role does electric potential play in the operation of a capacitor?

Electric potential determines the voltage across a capacitor, affecting its ability to store and release energy.

Explain how the conservation of energy principle applies to electric potential energy in a closed system.

In a closed system, the total mechanical energy, including electric potential energy, remains constant unless external work is done.

Explain the relationship between electric potential and electric field.

Electric potential is related to the electric field as the negative gradient of the potential. It indicates the potential energy per unit charge at a point, while the electric field represents the force per unit charge.

Describe how electric potential energy changes when a charge is moved in an electric field.

Electric potential energy increases when a charge is moved against the electric field and decreases when moved along the field direction.

How is the concept of electric potential used in designing electrical circuits?

Electric potential helps determine the voltage across components, ensuring proper functioning and energy distribution in circuits.

Which of the following are examples of potential difference in practice? (Select all that apply)

- A. Voltage across a battery ✓**
- B. Voltage drop across a resistor ✓**
- C. Electric field strength
- D. CapacitANCE of a capacitor

What factors affect the electric potential at a point due to a point charge? (Select all that apply)

- A. The magnitude of the charge ✓**
- B. The distance from the charge ✓**
- C. The medium between the charge and the point ✓**
- D. The speed of the charge

What are the characteristics of a conductor in electrostatic equilibrium? (Select all that apply)

- A. The electric field inside is zero. ✓**
- B. The electric potential is constant throughout. ✓**
- C. The surface is an equipotential surface. ✓**
- D. The electric field is strongest inside the conductor.

Discuss the significance of equipotential surfaces in understanding electric fields.

Equipotential surfaces help visualize electric fields, indicating regions of constant potential where no work is needed to move a charge.

Which of the following are true about equipotential surfaces? (Select all that apply)

- A. They are perpendicular to electric field lines. ✓**
- B. No work is done moving a charge along them. ✓**
- C. They can intersect each other.
- D. They have constant electric potential. ✓**

Which of the following statements about electric potential are true? (Select all that apply)

- A. It is a scalar quantity. ✓**
- B. It is measured in volts. ✓**
- C. It can be negative. ✓**
- D. It is a vector quantity.

In which scenarios is the electric potential energy of a system increased? (Select all that apply)

- A. Moving a positive charge closer to a positive charge ✓**
- B. Moving a negative charge closer to a positive charge ✓**
- C. Moving a positive charge away from a negative charge ✓**
- D. Moving a negative charge away from a positive charge

What happens to the electric potential as you move closer to a positive point charge?

- A. It decreases
- B. It remains constant
- C. It increases ✓**
- D. It becomes zero

What is the potential difference across a capacitor in a series circuit?

- A. Equal to the total voltage
- B. Zero
- C. The same for each capacitor
- D. Divided among the capacitors ✓**