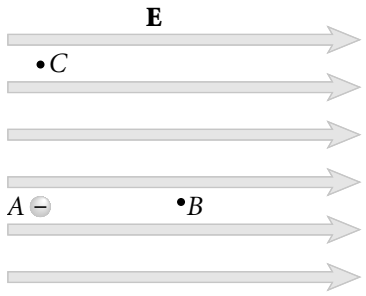
Standardized Test Prep

MULTIPLE CHOICE

Use the diagram below to answer questions 1–2.



1. What changes would take place if the electron moved from point A to point B in the uniform electric field?

A. The electron's electrical potential energy would increase; its electric potential would increase.
B. The electron's electrical potential energy would increase; its electric potential would decrease.
C. The electron's electrical potential energy would decrease; its electric potential would decrease.
D. Neither the electron's electrical potential energy nor its electric potential would change.

2. What changes would take place if the electron moved from point A to point C in the uniform electric field?

F. The electron's electrical potential energy would increase; its electric potential would increase.
G. The electron's electrical potential energy would increase; its electric potential would decrease.
H. The electron's electrical potential energy would decrease; its electric potential would decrease.
J. Neither the electron's electrical potential energy nor its electric potential would change.

Use the following passage to answer questions 3–4.

A proton ($q = 1.6 \times 10^{-19}$ C) moves 2.0×10^{-6} m in the direction of an electric field that has a magnitude of 2.0 N/C.

3. What is the change in the electrical potential energy associated with the proton?

A. -6.4×10^{-25} J
B. -4.0×10^{-6} V
C. $+6.4 \times 10^{-25}$ J
D. $+4.0 \times 10^{-6}$ V

4. What is the potential difference between the proton's starting point and ending point?

F. -6.4×10^{-25} J
G. -4.0×10^{-6} V
H. $+6.4 \times 10^{-25}$ J
J. $+4.0 \times 10^{-6}$ V

5. If the negative terminal of a 12 V battery is grounded, what is the potential of the positive terminal?

A. − 12 V
B. + 0 V
C. + 6 V
D. + 12 V

6. If the area of the plates of a parallel-plate capacitor is doubled while the spacing between the plates is halved, how is the capacitance affected?

F. C is doubled
G. C is increased by four times
H. C is decreased by 1/4
J. C does not change

Use the following passage to answer questions 7–8.

A potential difference of 10.0 V exists across the plates of a capacitor when the charge on each plate is 40.0 μC.

7. What is the capacitance of the capacitor?

A. 2.00×10^{-4} F
B. 4.00×10^{-4} F
C. 2.00×10^{-6} F
D. 4.00×10^{-6} F