Two electrons (e₁ and e₂) and a proton (p) lie on a straight line, as shown. The directions of the force of e₂ on e₁, the force of p on e₁, and the total force on e₁, respectively, are:

A. →, ←, →
B. ←, →, →
C. →, ←, ←
D. ←, →, ←
E. ←, ←, ←

To make an uncharged object have a negative charge we must:

A. add some atoms
B. remove some atoms
C. add some electrons
D. remove some electrons
E. write down a negative sign

An electrical insulator is a material:

A. containing no electrons
B. through which electrons do not flow easily
C. that has more electrons than protons on its surface
D. cannot be a pure chemical element
E. must be a crystal

The magnitude of the charge on an electron is approximately:

A. $10^{23}$ C
B. $10^{-23}$ C
C. $10^{19}$ C
D. $10^{-19}$ C
E. $10^{9}$ C

Two small charged objects attract each other with a force $F$ when separated by a distance $d$. If the charge on each object is reduced to one-fourth of its original value and the distance between them is reduced to $d/2$ the force becomes:

A. $F/16$
B. $F/8$
C. $F/4$
D. $F/2$
E. $F$

SOLUTION KEY: D, C, B, D, C