

45. Letting $a = 5.292 \times 10^{-11} \text{ m}$ be the Bohr radius, the potential energy becomes

$$U = -\frac{e^2}{4\pi\epsilon_0 a} = \frac{(8.99 \times 10^9 \text{ N}\cdot\text{m}^2/\text{C}^2)(1.602 \times 10^{-19} \text{ C})^2}{5.292 \times 10^{-11} \text{ m}} = -4.36 \times 10^{-18} \text{ J} = -27.2 \text{ eV} .$$

The kinetic energy is $K = E - U = (-13.6 \text{ eV}) - (-27.2 \text{ eV}) = 13.6 \text{ eV}$.