Electric Potential Worksheet

① $V = \frac{kq}{r}$

$-6.4\times10^{4} = \frac{(9\times10^{9})q}{.25}$

$q = -1.8\times10^{-6}\ C$

② $V = \frac{kq}{r} = \frac{(9\times10^{9})(4.5\times10^{-4})}{.5} = 8.1\times10^{6}\ V$

③ $V = \frac{E_e}{q}$

$2.5\times10^{4} = \frac{E_e}{1.6\times10^{-19}}$

$E_e = 4\times10^{-15}\ J$

④ $E = \frac{V}{d} = \frac{300}{.005} = 6\times10^{4}\ N/C$

⑤ $E = \frac{V}{d} = \frac{450}{.02} = 2.3\times10^{4}\ N/C$

⑥ $E = \frac{V}{d}$

$1.5\times10^{4} = \frac{V}{.012}$

$V = 180\ V$

⑦ $\Delta E_k = E_e$

$\left(\frac{1}{2}mv_f^2 - \frac{1}{2}mv_i^2\right) = qV$

$\frac{1}{2}m\left(v_f^2 - v_i^2\right) = qV$

$\frac{1}{2}(9.11\times10^{-31})\left[(2.5\times10^{6})^2 - (3.0\times10^{5})^2\right] = (1.6\times10^{-19})V$

$V = 17.5\ V$

(8) $\Delta E_k = E_e$

$\frac{1}{2}mv_f^2 - 0 = qV$

$\frac{1}{2}(1.67\times10^{-27})\,v_f^2 = 1.6\times10^{-19}(250)$

$v_f = 2.2\times10^5\ m/s$