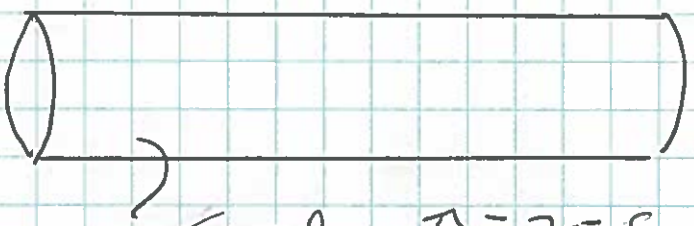


Good, $\tau = 25\ fs = 25\times10^{-15}\ s$

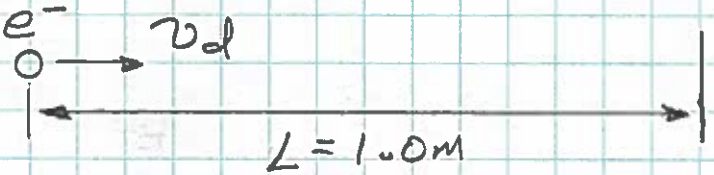
a.) For $E = 35\ mV/m = 35\times10^{-3}\ V/m$

Drift Speed: $v_d = \frac{eE}{m}\tau$

$e = 1.6\times10^{-19}\ C$; $m = 9.11\times10^{-31}\ kg$

So: $v_d = \underline{1.537\times10^{-4}\ m/s}$

b.)



$T_{trip} = \frac{L}{v_d} = 6507\ s$

$= \underline{108.5\ min.}$

c.) $\tau = 25\times10^{-15}\ \frac{s}{collision}$ for $t = 6507\ s$

Number of Collisions $= \frac{t}{\tau}$

$= \underline{2.603\times10^{17}}$