KEY

First Name:_____ Last Name:_____

L08 – Formative Quiz – Parallel Plates

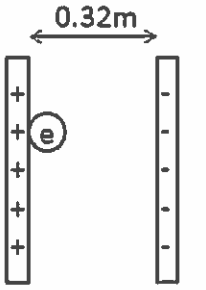
Electricity and Magnetism

$|\vec{F}_e| = \frac{kq_1q_2}{r^2}$ $\quad \Delta V = \frac{\Delta E}{q}$

$|E| = \frac{kq}{r^2}$ $\quad I = \frac{q}{t}$

$\vec{E} = \frac{\vec{F}_e}{q}$ $\quad |\vec{F}_m| = Il_\perp|\vec{B}|$

$|E| = \frac{\Delta V}{\Delta d}$ $\quad |\vec{F}_m| = qv_\perp|\vec{B}|$



$|\vec{E}| = 2.5\ N/C$

Q1: Two parallel plates are 0.32m apart, with a uniform electric field of 2.5 N/C, as depicted above. If an electron is moved from the positively charged plate to the negatively charged plate, how much Electric Potential Energy, in electron-volts (eV), does the electron gain? *(3 mark)*

$|\vec{E}| = \frac{\Delta V}{\Delta d}$

$2.5\ N/C = \frac{\Delta V}{0.32m}$

$\boxed{\Delta V = 0.8\ V}$

1 mark

$\Delta V = \frac{\Delta E}{q}$

$0.8V = \frac{\Delta E}{1.6\times10^{-19}C}$

$\boxed{\Delta E = 1.28\times10^{-19}\ J}$

1 mark

$\frac{1.28\times10^{-19}\ J}{1} \cdot \frac{1eV}{1.60\times10^{-19}\ J} = \boxed{0.8\ eV}$

1 mark

MARKING:

Beginning	0.0 – 1.0
Progressing	1.5 – 2.0
Competent	2.5
Exemplary	3