

**IB Physics HL Notes**

# **Electromagnetic Induction**

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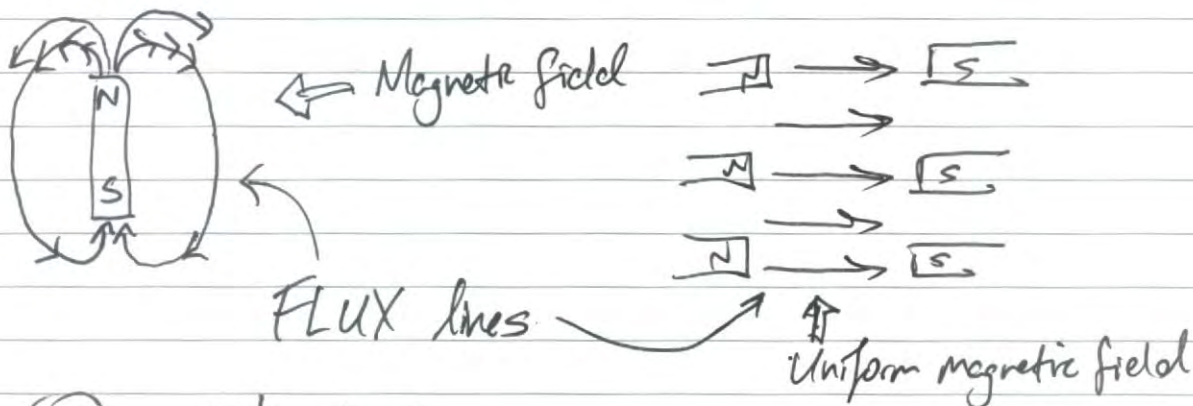
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# Electromagnetic Induction

Date

No.

\* Magnets must have N and S pole.



⊗ Into page

⊙ Out of page

\* Magnetic field unit: TESLA

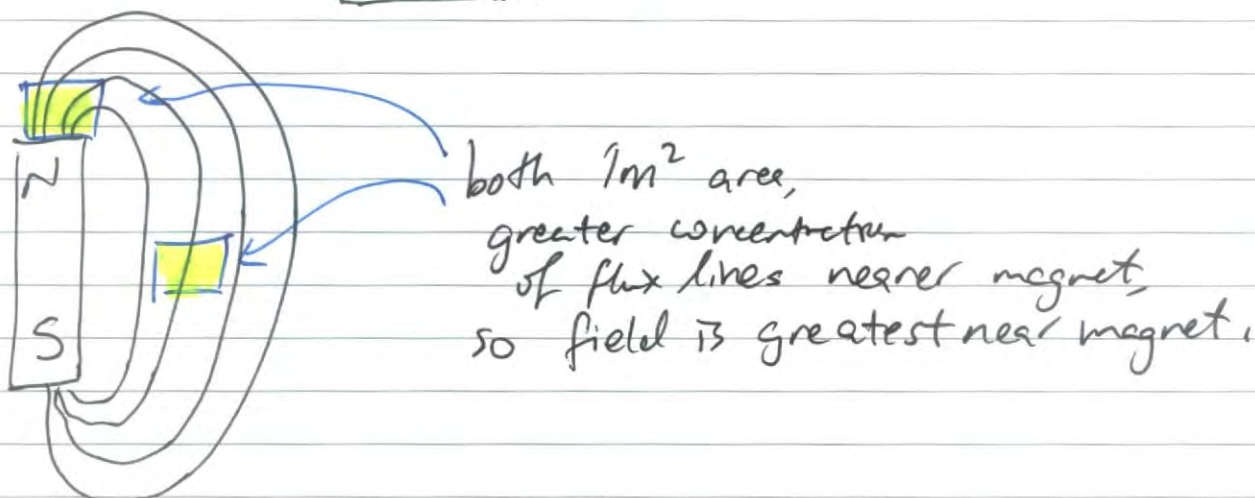
\* Earth mag field =  $\approx 10^{-4}$  T

$$1 \text{ T} = 10\,000 \text{ Gauss (G)}$$

$$\text{SI unit: } 1 \text{ T} = \boxed{1 \frac{\text{Wb}}{\text{m}^2}} = \frac{\text{Weber}}{\text{m}^2}$$

\* Weber is quantity of flux lines

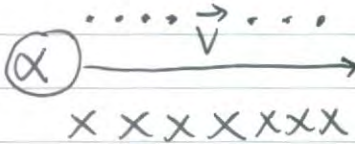
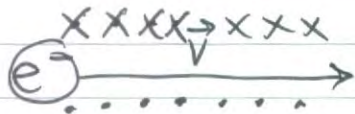
$$1 \text{ T} = \boxed{1 \frac{\text{kg}}{\text{C}\cdot\text{s}}}$$



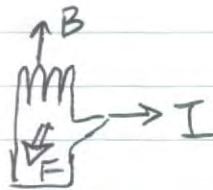
# Magnetic Fields (unit 6)

Date

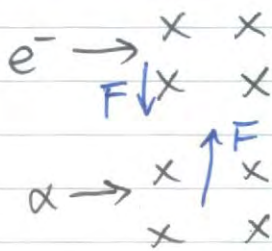
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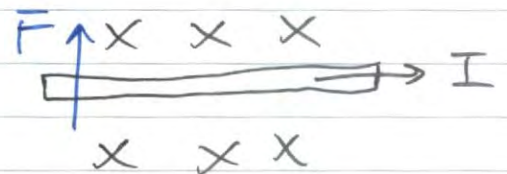
## RH Palm Rule



## Free moving charge

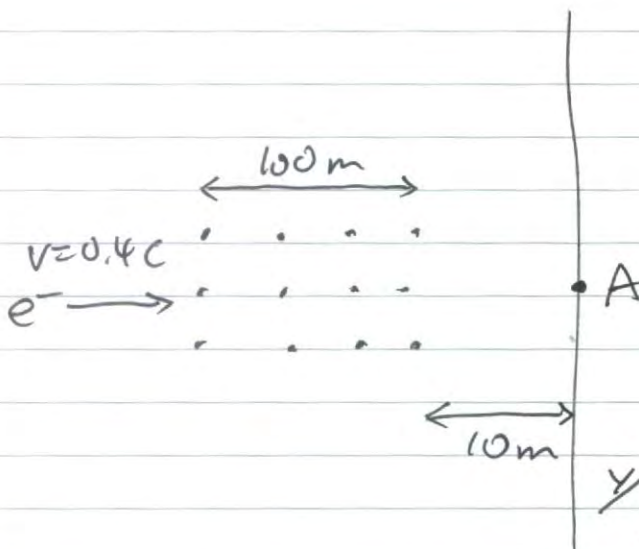


## Current-carrying wire



$$F = qvB \sin \theta$$

$$F = BIL \sin \theta$$



$$F = qvB = 9.6 \times 10^{-12} = ma$$

$$m_e = 9.1 \times 10^{-31}$$

$$\text{so } a = 1.1 \times 10^{19} \text{ m s}^{-2}$$

$$t = \frac{100}{0.4c} \Rightarrow t = 8.3 \times 10^{-7} \text{ s}$$

$$\begin{aligned} u &= 0 \\ v &= ? \\ a &= 1 \times 10^{19} \\ t &= 8.3 \times 10^{-7} \end{aligned}$$

$$s = \frac{1}{2} at^2 = 3.79 \times 10^6 \text{ m}$$