

Solenoid: $B = \mu_0 n I$.

(fig. 26.35)

$\uparrow$
of turns
per unit length

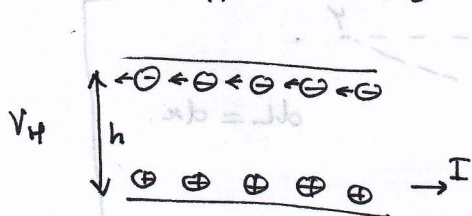
Toroids:

(fig. 26.38)

$$B = \frac{\mu_0 N I}{2\pi r}$$

(notice: $n = \frac{N}{2\pi r}$).

Hall effect: (fig. 26.13)



$$V_H = \frac{I B}{n q t} = E h = v_d B h.$$

$$F = qE = q v_d B \Rightarrow E = v_d B.$$

$$I = n q A v_d \Rightarrow v_d = \frac{I}{n q h t}.$$

$$V_H = \frac{I B h}{n q h t}.$$



$$\vec{M} = I \vec{A}$$

area of loop $\times$
normal vector

$$\vec{\tau} = \vec{M} \times \vec{B}$$

$$= M B \sin \theta$$

$$U = -\vec{M} \cdot \vec{B} = -M B \cos \theta$$

Ampere's law:

$$\oint \vec{B} \cdot d\vec{l} = \mu_0 I_{enc.}$$

for a straight wire:

$$B(2\pi r) = \mu_0 I \Rightarrow B = \frac{\mu_0 I}{2\pi r}$$

used to compute $\vec{B}$ inside & outside a wire

Table 26.1

Note: $\oint \vec{E} \cdot d\vec{l} = 0 \Rightarrow$ no net charge

$$\left(\text{Compare with } \oint \vec{E} \cdot d\vec{l} = \frac{Q_{enc}}{\epsilon_0} \right)$$