2. $r = 0.35\ m$

$\Delta V = 600\ V$

$B = 0.8\ T$

$\omega = ?$

$F = qVB\sin\theta$

$= ILB\sin\theta$

a) $\Sigma F = ma = qvB\sin\theta = \frac{mv^2}{r}$

$\omega = \frac{qB\sin\theta}{m}$

$= \frac{1.6\times10^{-19} \times 0.8 \times \sin 90}{1.67 \times 10^{-27}}$

$=$ rad/sec

b) $\omega = \frac{v}{r}$

$v = \omega r$

$= 0.35\omega$ m/s

c) $KE = \frac{1}{2}mv^2$ J

$= \frac{1}{2}mv^2 \times \frac{1}{1.6\times10^{-19}}$ eV

4. $\frac{m}{l} = 0.5\ g/cm = \frac{0.5\times10^{-3}}{10^{-2}}\frac{kg}{m} = 0.05\ kg/m$

$I = 2A$

a)

$\Sigma F = ma$ → $g = 9.81\ m/s^2$

$ILB\sin\theta = ma$

$B = \frac{ma}{}$

$$= \frac{mg}{Il\sin\theta}$$

$$= \frac{m}{l} \times \frac{g}{I}$$

$$= \frac{0.05 \times 9.81}{2}$$

b) Direction : W → E

Chapter 30

1. $B_{P_0} = -B_1 - B_2$

$$= -2\,\frac{\mu_0 I}{2\pi r}$$

$$= \frac{-2 \times 4\pi \times 10^{-7} \times 5}{2\pi \times 5 \times 10^{-2}}$$

$$= -4 \times 10^{-7} \times 10^{2}$$

$$= -4 \times 10^{-5}$$

b) $B_{P_1} = -B_2 + B_1$

$$= -\frac{4\pi \times 10^{-7} \times 5}{2\pi \times 20 \times 10^{-2}} + \frac{4\pi \times 10^{-7} \times 5}{2\pi \times 10 \times 10^{-2}}$$

$$= -\frac{10 \times 10^{-7} \times 10^{2}}{20} + 10^{-5}$$

$$= -5 \times 10^{-5} + 10^{-5}$$

$$= -4 \times 10^{-5}$$