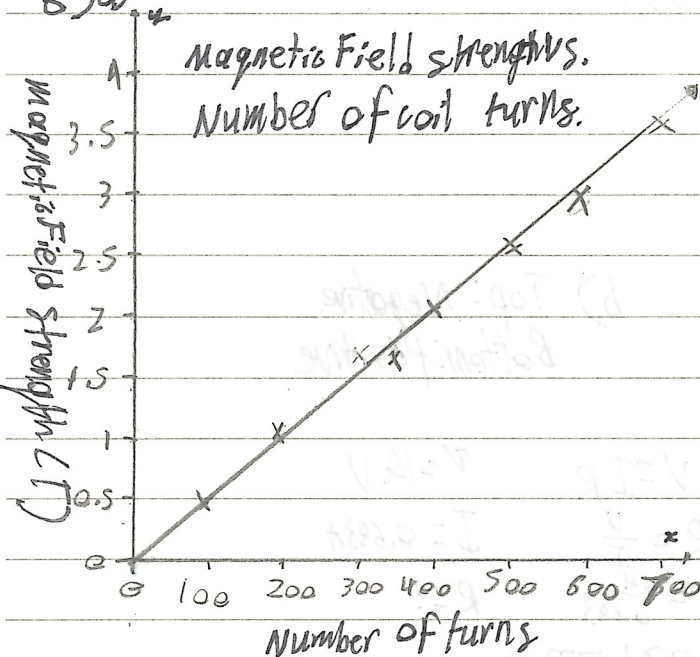


# Magnetism

Pranav Sharma - 33629818

6) a)



Multiple Choice

1) B

2) B

3) C

4) D

5) A

7) a)  $B = \frac{\mu I}{D}$

$D = 0.02 \text{ m}$

$B = \frac{2 \times 10^{-2} \times 3 \times 10^3}{0.02}$

$I = 3 \times 10^3 \text{ A}$

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

$= 3 \times 10^{-8} \text{ T}$

b)  $3 \times 10^{-8} \times 7 = 2.1 \times 10^{-7} \text{ T}$

b) independent: number of turns  
dependent: T

c)  $1.51 = T$

d)  $\frac{V_2 - V_1}{x_2 - x_1} = m$

$\frac{2.99 - 2.51}{600 - 500}$

$= \frac{0.48}{100}$

$= 0.0048$

10)  $B = \frac{\mu_0 N I}{L}$

$L = ? \text{ m}$

$N = 450$

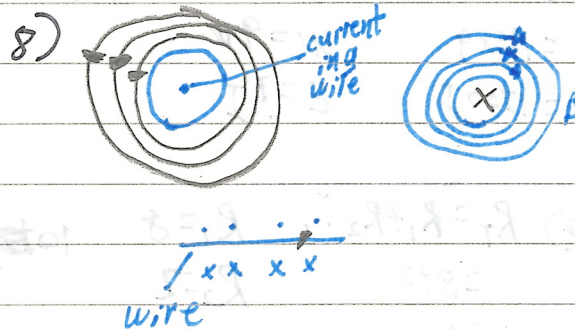
$= \frac{0.0014175}{1.5 \times 10^{-6}}$

$I = 2.5 \text{ A}$

$= 0.094 \text{ m}$

$B = 15 \times 10^{-3} \text{ mT}$

$\mu_0 = 4\pi \times 10^{-7} \text{ N/A}^2$



9) exposure prolonged exposure to a magnetic field

11) - Increase current.

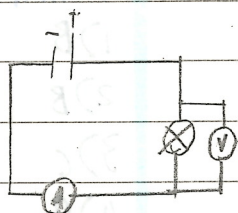
- Increase voltage

# Electricity

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1) A 2) C 3) A 4) D 5) B

6)



$$7) a) D = \frac{V}{E} \quad V = 60 \text{ kV}$$

$$= \frac{60000}{16000} \quad E = 16 \text{ kV/m}$$

$$= 3.75 \text{ m} \quad D = ?$$

b) Top: Negative  
Bottom: Positive

$$8) a) W = VI \quad V = 14 \text{ V}$$

$$I = 9/14 \quad W = 9 \text{ W}$$

$$= 0.643 \text{ A} \quad I = ?$$

$$b) V = IR \quad V = 14 \text{ V}$$

$$R = \frac{V}{I} \quad I = 0.643 \text{ A}$$

$$= \frac{14}{0.643} \quad R = ?$$

$$= 21.772 \Omega$$

$$c) Wxt = E \quad t = 3.25 \text{ mm} = 195 \text{ s}$$

$$= 195 \times 9 \quad W = 9 \text{ W}$$

$$= 1755 \text{ J} \quad E = ? \text{ J}$$

$$9) a) R_T = R_1 + R_2 \dots \quad R_1 = 8$$

$$= 8 + 2 \quad R_2 = 2$$

$$= 10 \Omega \quad V = 30$$

$$10) a) 1.5 \times 6.2 \text{ k} \quad k = 6.25 \times 10^{18}$$

$$= 9.375 \times 10^{18}$$

$$b) V = IR \quad R_T = ?$$

$$I = \frac{V}{R} \quad I = ?$$

$$= \frac{30}{10}$$

$$= 3 \text{ A}$$

b) 1 s coulomb/second

$$c) 1.5 \times 9 \times 60 \times 60$$

$$= 48000 \text{ C}$$

$$d) W = VI \quad V = 240 \text{ V}$$

$$= 240 \times 1.5 \quad t = 32400 \text{ s}$$

$$= 360 \text{ W} \quad I = 1.5 \text{ A}$$

$$11) F = \frac{1}{4\pi\epsilon_0} \times \frac{q_1 q_2}{r^2}$$

$$= -2.61 \times 10^{-2} \text{ N} \quad k = 8.987 \times 10^9$$

$$k = 6.25 \times 10^{17}$$

$$q_1 = -6 \times 10^{-7} \text{ C}$$

$$q_2 = 1.4 \times 10^{-7} \text{ C}$$

$$r = 17 \text{ m}$$

$$F = ?$$

$$360 \times 9 \quad E = ? \text{ J}$$

$$= 4.71.17 \text{ J} \quad W = ? \text{ W}$$