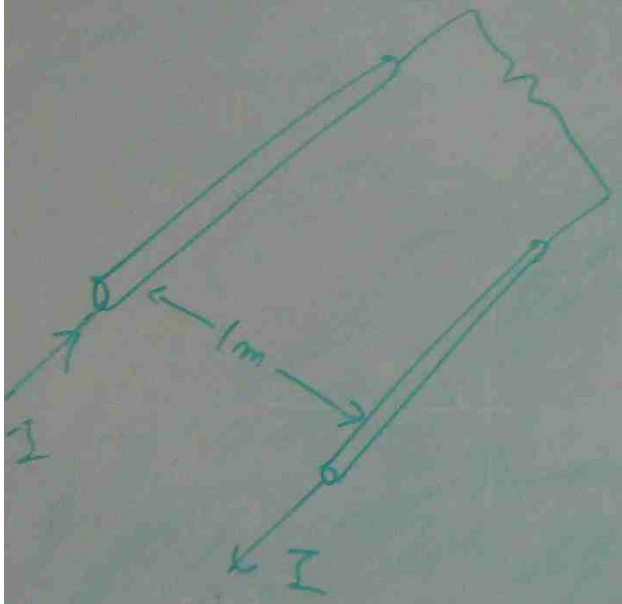
CALCULATION OF THE FORCE BETWEEN TWO CURRENT CARRYING CONDUCTORS

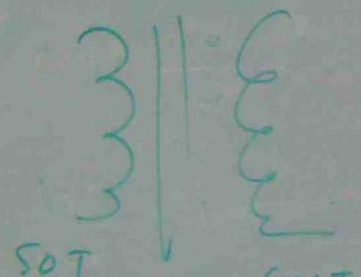


$$F = 2 \times 10^{-7} \times I \quad (N)$$

(1 m SEPARATION)

$$F = \frac{2 \times 10^{-7} I}{d} \quad (N) \quad (d \text{ m SEPARATION})$$

pb A TRANSFORMER HAS 50 TURNS ON THE PRIMARY AND 600 TURNS ON THE SECONDARY. IF A FLUX OF 0.25 Wb IS REDUCED TO ZERO IN 5 ms CALCULATE INDUCED EMF IN EACH COIL.



ϕ 0.25 → 0

5 ms

$$e = N \frac{d\phi}{dt}$$

PRIMARY

$$e_1 = 50 \times \frac{0.25 - 0}{5\text{ms}}$$

$$= \frac{50 \times 0.25}{5 \times 10^{-3}}$$

$$= \frac{50 \times 0.25 \times 10^{3}}{5} = 2500\text{V}$$

$$e_2 = N \frac{d\phi}{dt}$$

$$= 600 \times \frac{(0.25 - 0)}{5 \times 10^{-3}}$$

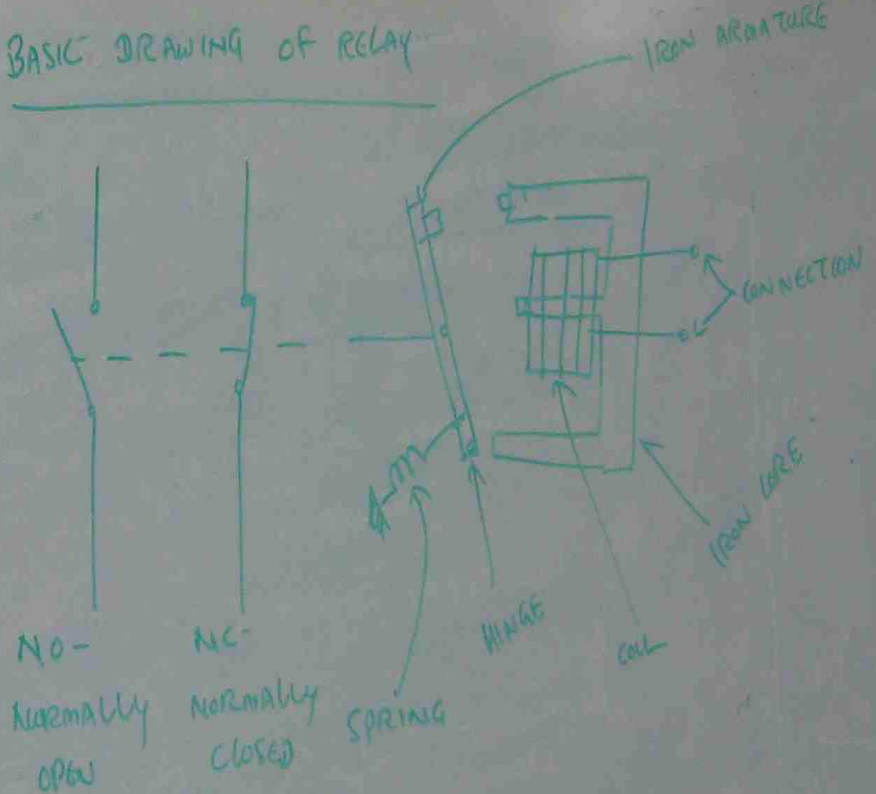
$$= \frac{600 \times 0.25 \times 10^{3}}{5}$$

$$= 30{,}000\text{V}$$

PRACTICAL APPLICATIONS OF ELECTRO MAGNETIC INDUCTION

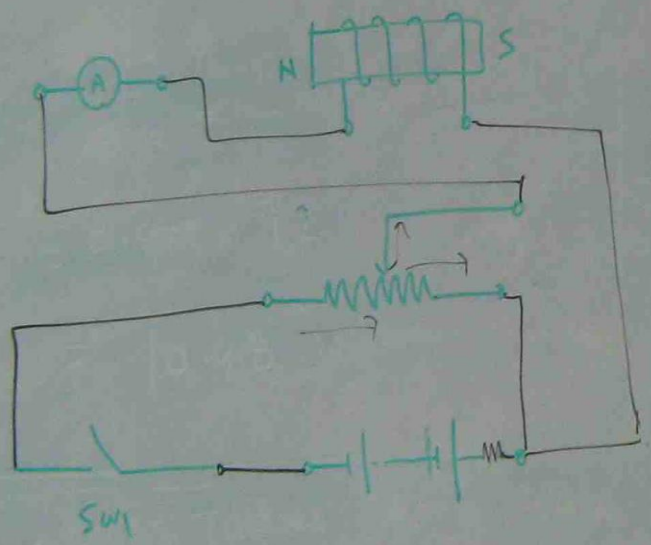
- GENERATORS
- MOVING COIL MICROPHONES
- LOUD SPEAKERS
- TAPE RECORDERS
- TRANSFORMERS
- IGNITION COILS
- CHOKES
- POWER SUPPLIES

BASIC DRAWING OF RELAY



CONNECTION OF MAGNETIC CIRCUIT

CONNECT THE GIVEN ELEMENTS



8. IF A CONDUCTOR IS BEING ROTATED AT 1000 RPM IN MAGNETIC FIELD AND INDUCES 200V. AT 500 RPM THE INDUCED VOLTAGE WILL BE (a) 50V (b) 100V (c) 200V (d) 400V

N = 1000 RPM V = 200V

—— 500 RPM ——— ?

$$V = \frac{200 \times 500}{1000} = 100V$$