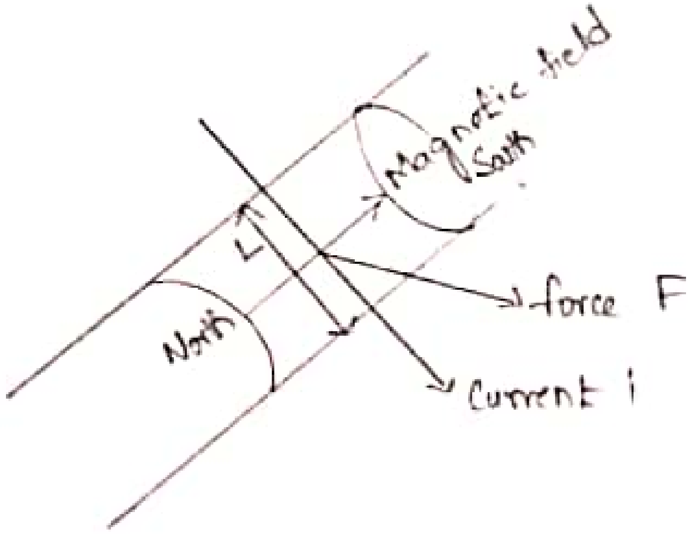
Fleming's Left Hand Rule

When a current carrying conductor is placed inside a magnetic field, a force acts on conductor in direction perpendicular to both the current and magnetic field directions.



$$F = BiL$$

Fleming's left hand rule is mainly applicable to electric motors.

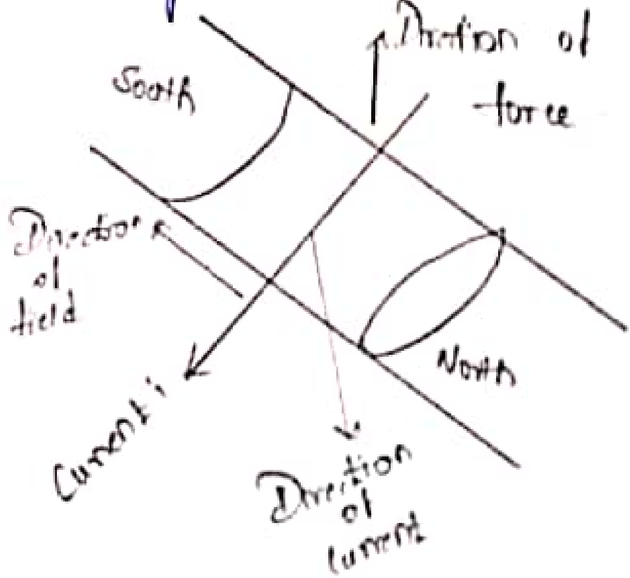
L = Length of conductor

H = magnetic field strength

i = current.

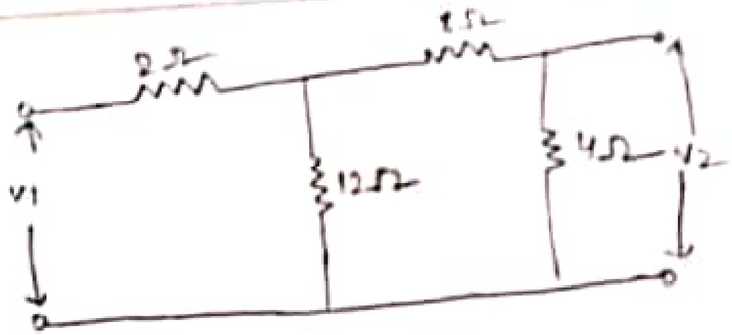
Fleming's Right Hand rule.

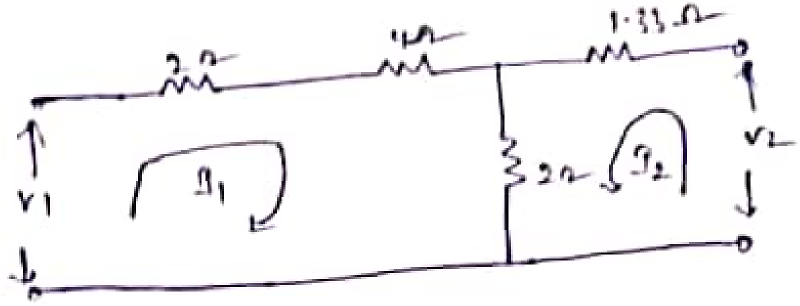
As per Faraday's law of electromagnetic induction, whenever a conductor moves inside a magnetic field there will be an induced current in it. If this conductor gets forcefully moved inside the magnetic field, there will be relation b/w the direction of applied force, magnetic field and current.



Flemings right hand rule is mainly applicable to electric generators.

12M





$$V_1 - 6I_1 - 2(I_1 + I_2) = 0$$

$$V_1 - 6I_1 - 2I_1 - 2I_2 = 0$$

$$V_1 - 8I_1 - 2I_2 = 0$$

$$V_1 = 8I_1 + 2I_2 \longrightarrow (1)$$

$$V_2 - 1.33I_2 - 2(I_1 + I_2) = 0$$

$$V_2 = 3.33 + 2I_1 \longrightarrow (2)$$

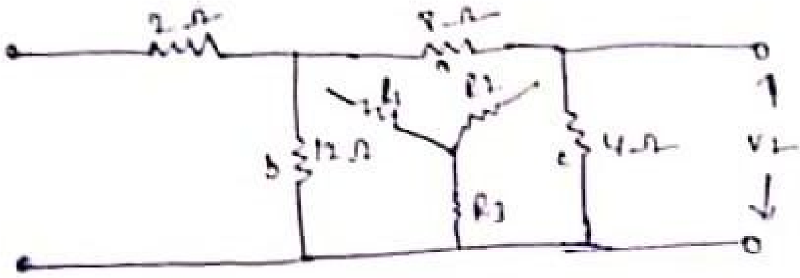
$$I_2 = \frac{V_2 - 2I_1}{3.33}$$

sub in eq (1)

$$V_1 = 8I_1 + 2\left(\frac{V_2 - 2I_1}{3.33}\right)$$

$$V_1 = 8I_1 + 0.6V_2 - 1.2I_1$$

$$V_1 = 6.8I_1 + 0.6V_2$$



Converting delta to star.

$\Rightarrow R_1 = \dfrac{R_a R_b}{R_a+R_b+R_c} = \dfrac{8\times12}{8+12+4} = \dfrac{96}{24} = 4$

$R_2 = \dfrac{R_a R_c}{R_a+R_b+R_c} = \dfrac{8\times4}{8+12+4} = \dfrac{32}{24} = 1.33$

$R_3 = \dfrac{R_b R_c}{R_a+R_b+R_c} = \dfrac{12\times4}{8+12+4} = \dfrac{48}{24} = 2$

(2) $\Rightarrow$

$3.33 I_2 = V_2 - 2 I_1$

from (3) and (4)

$h_{11} = 6.8 \qquad h_{12} = 0.6$

$h_{21} = \dfrac{1}{3.33} \qquad h_{22} = \dfrac{-2}{0.33}$