

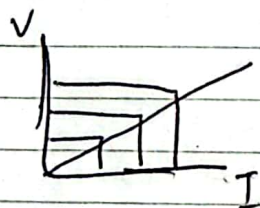
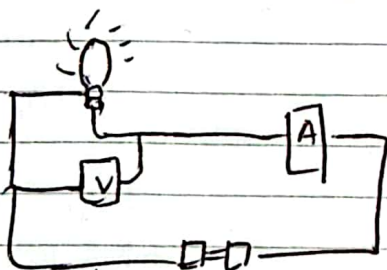
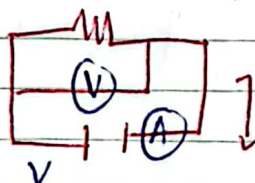
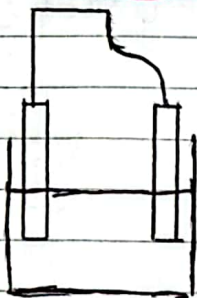
ELEKTRODINAMIKA

1. Hukum Ohm
2. Rangkaian Listrik

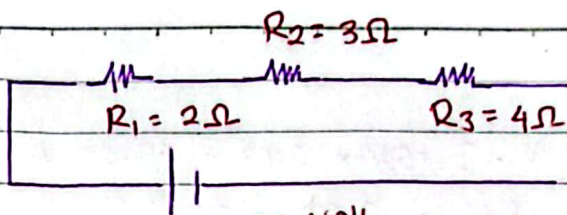
Pembahasan:

$$J = \sigma R \rightarrow DC$$

$$V = IR \rightarrow AC$$



$$V = I \cdot R$$



$$R_{tot} = 9\Omega$$

$$I = \frac{27}{9} = 3A$$

Arus yg mengalir pd $R_1 \rightarrow R_3$

Tegangan $R_1 = 6$

$R_2 = 9$

$R_3 = 12$

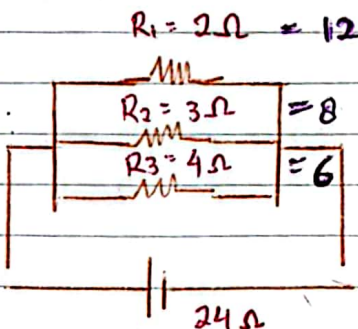
" total = 27

$$P = \frac{V}{R}$$

$$12 \times 24 p = 288 W$$

$$8 \times 24 p = 192 w$$

$$6 \times 24 p = 144 w$$



$$R_{tot} \rightarrow \frac{1}{R_t} = \frac{1}{2} + \frac{1}{3} + \frac{1}{4} \quad \left| \quad \frac{26}{24} = \frac{13}{12} \right.$$

$$\frac{1}{R_t} = \frac{12 + 8 + 6}{24}$$

$$\frac{1}{R_t} = \frac{26}{24} = 1,08 \quad R = \frac{24}{26} = 0,9$$

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

$$= \frac{24}{0,9}$$

$$= 26 A$$

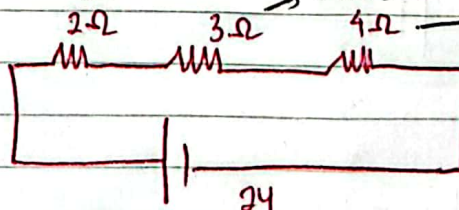
$$\frac{24}{12} = 2$$

$$= 26 A$$

$$14,25w$$

$$21,38w$$

$$28,51w$$



$$I = \frac{24}{9} = 2,67$$

$$P = \frac{V}{Q}$$

$$\text{Daya } R_1 = V \cdot I = 5,34 \times 2,67 = 14,25 \text{ W}$$

$$R_2 = 8,01 \cdot 2,67 = 21,38 \text{ W}$$

$$R_3 = 10,68 \cdot 2,67 = 28,51 \text{ W}$$

$$\text{Tegangan } R_1 = (2 \cdot 2,67)$$

$$= 5,34$$

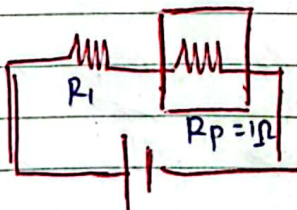
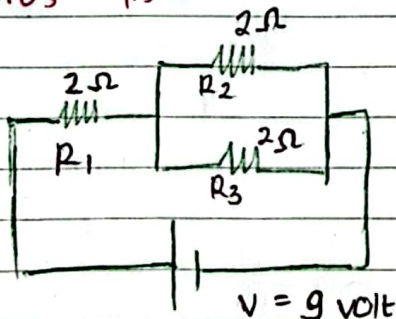
$$R_2 = (3 \cdot 2,67)$$

$$= 8,01$$

$$R_3 = (4 \cdot 2,67)$$

$$= 10,68$$

Perbandingan lampu secara paralel & seri adalah seri yg lebih kecil dari pada paralel dan bisa membuat listrik hemat & tetap, sedangkan paralel lebih besar dari seri artinya lampu lebih terang & boros listrik



$$R_p = \frac{2 \cdot 2}{2+2} = \frac{4}{4} = 1$$

$$\begin{aligned} R_{\text{total}} &= R_1 + R_p \\ &= 2 + 1 \\ &= 3 \Omega \end{aligned}$$

$$I = \frac{V}{R} = \frac{9}{3} = 3 \text{ A}$$

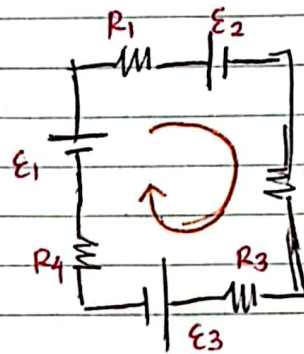
$$V_{R_p} = I \cdot R_p = 3 \cdot 1 = 3 \text{ volt}$$

$$V_{R_2} = 3 \text{ volt}$$

$$V_{R_3} = 3 \text{ volt}$$

RANGKAIAN KOMPLEK

Hukum Kirchhoff



$$R_1 = 1 \Omega$$

$$R_2 = 2 \Omega$$

$$R_3 = 3 \Omega$$

$$R_4 = 4 \Omega$$

$$E_1 = 11 \text{ V}$$

$$E_2 = 5 \text{ V}$$

$$E_3 = 3 \text{ V}$$

$$E_1 > E_2 > E_3$$

- 1.) Gambar arah arus sesuai dengan besarnya E
- 2.) Gambar Loop sesuka hati
- 3.) Jika arah arus searah dengan arah loop maka +

$$\sum E + \sum iR = 0$$

$$-E_1 + E_2 + E_3 + I(R_1 + R_2 + R_3) = 0$$

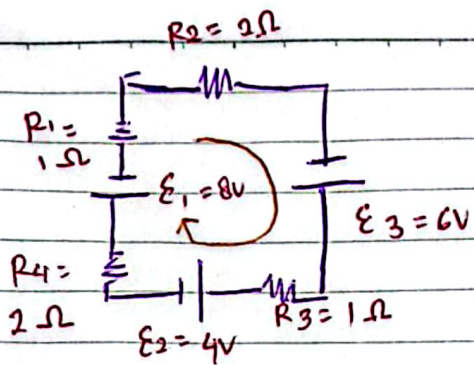
$$-10 + 5 + 3 + I(1 + 2 + 3 + 4) = 0$$

$$-2 I(10) = 0$$

$$I = \frac{2}{10} = \frac{1}{5} = 0,2$$

$$I = \frac{2}{10} = \frac{1}{5} = 0,2$$

$$\frac{2 \cdot 2}{2+2} = \frac{4}{4} = 1$$



Loop II

$$\sum E + \sum IR = 0$$

$$-E_3 + E_4 + I_2(R_2 + R_3 + R_4) + I_3 R_6 = 0$$

Gambar arus, Loop

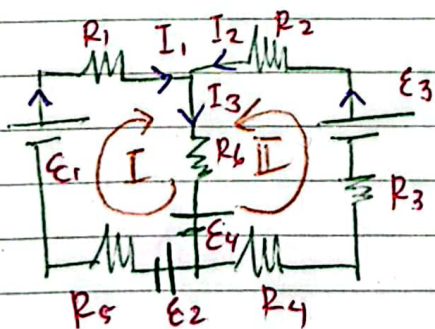
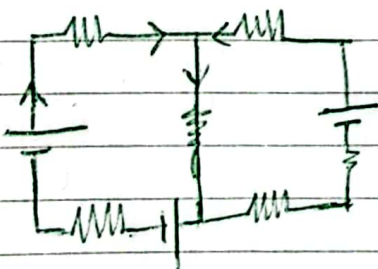
$$\sum E + \sum I \cdot R = 0$$

$$E_1 + E_2 + E_3 - I(R_1 + R_2 + R_3 + R_4) = 0$$

$$8 + 4 + 6 - I(1 + 2 + 1 + 2) = 0$$

$$6 - I(6) = 0$$

$$I = \frac{6}{6} = 1 \text{ A}$$



Loop I

$$\sum E - \sum IR = 0$$

$$-E_1 + E_4 + E_2 + I_1(R_1 + R_5) + I_3 R_6 = 0$$

KALISMA