

ARUS LISTRIK

kalisma

Elektrodinamika

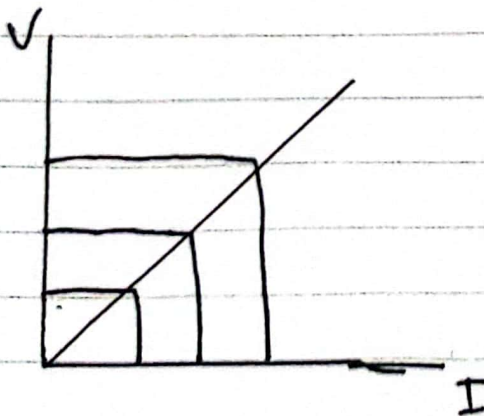
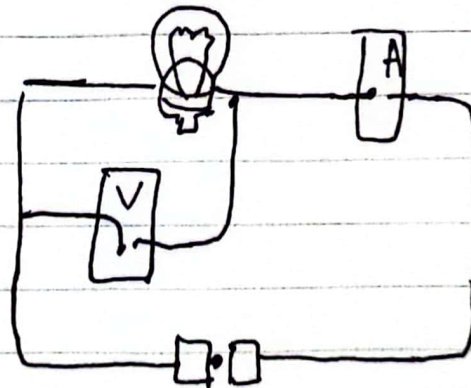
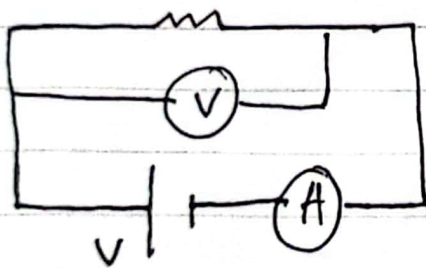
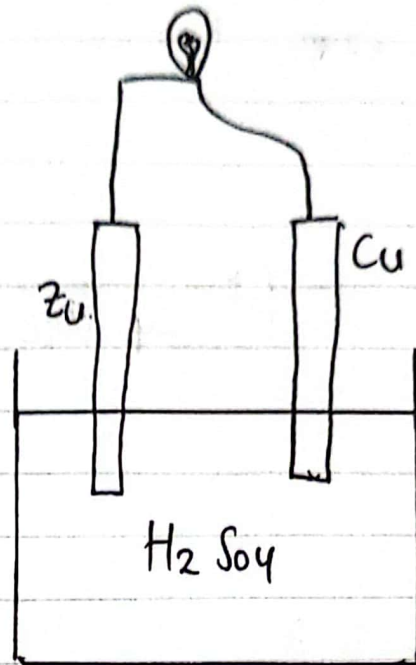
1. Hukum Ohm
2. Rangkaian listrik

Pembahasan :

$$J = \sigma E$$

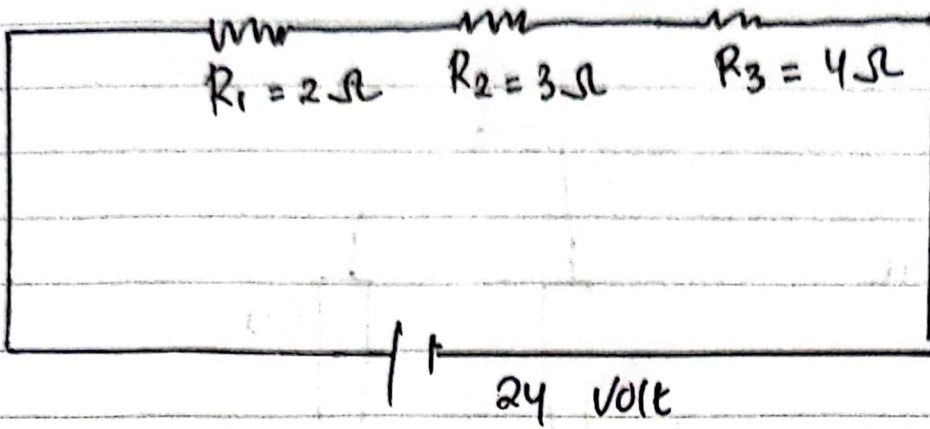
→ $V = I \cdot R$

Dc
Ac



$$V = I \cdot R$$

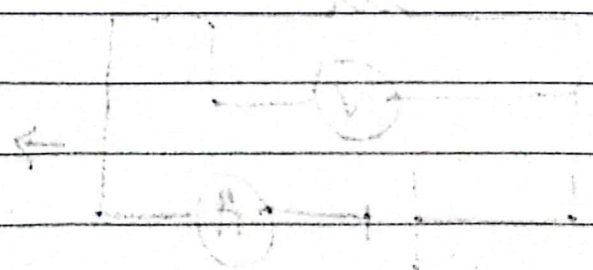
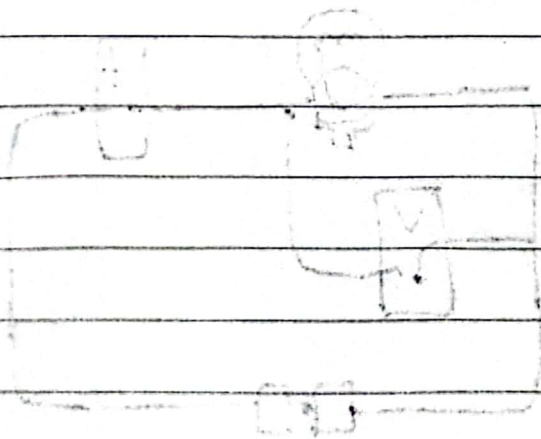
$$I = \frac{V}{R}$$

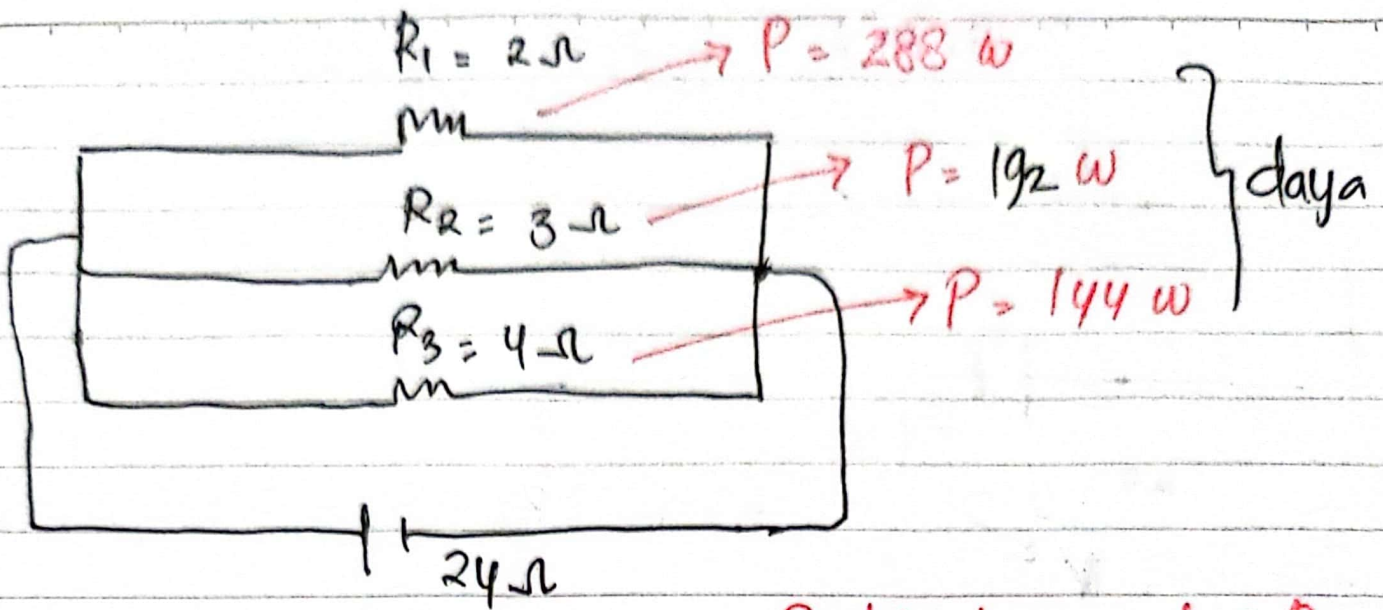


$$R_t = 9\Omega$$

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

$$= \frac{24}{9} = 3\text{ A}$$





R_1 lebih terang dari R_2
 R_2 lebih terang dari R_3

$$R_t = \frac{1}{\frac{1}{R_t}} = \frac{1}{2} + \frac{1}{3} + \frac{1}{4}$$

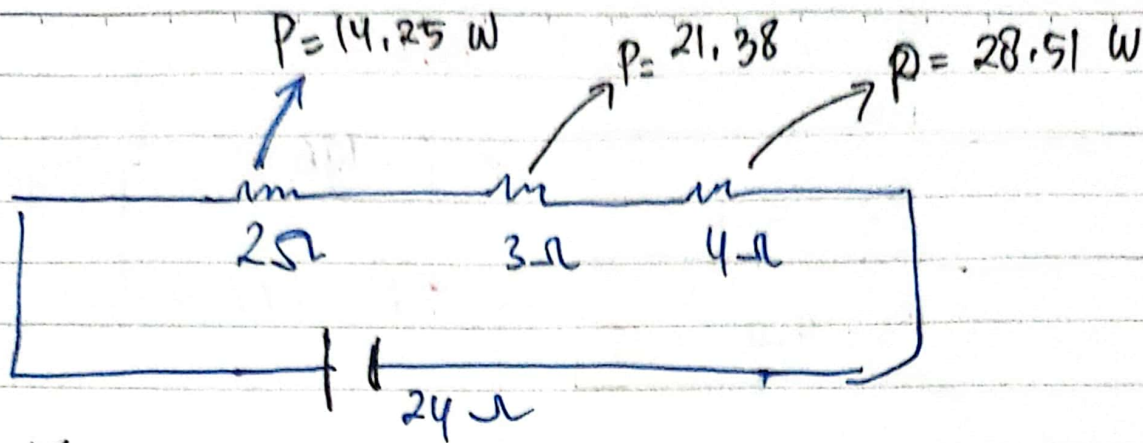
$$\frac{1}{R_t} = \frac{12 + 8 + 6}{24}$$

$$\frac{1}{R_t} = \frac{26}{24}$$

$$R_t = \frac{12}{13}$$

$$I = \frac{V}{R} = \frac{24}{\frac{12}{13}} = 26\ \text{A}$$

$$I \cdot R \cdot I = P$$

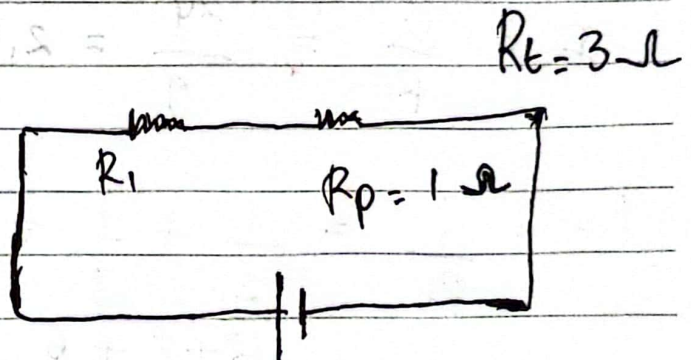
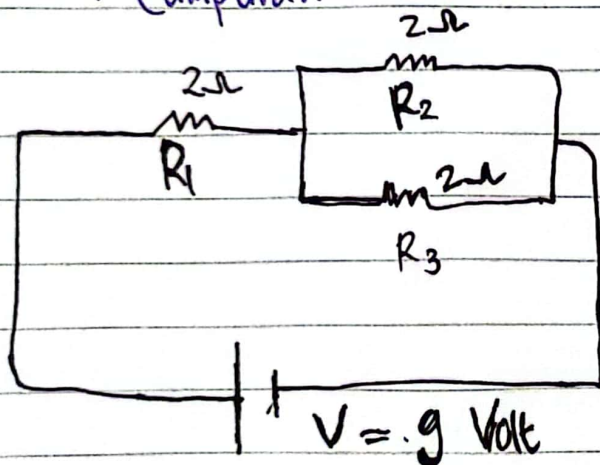


$$I = \frac{V}{R} = \frac{24}{9}$$

$$I = 2.67$$

$$R = R_1 + R_2 + R_3 = 2 + 3 + 4 = 9\Omega$$

⇒ Campuran.



$$I = 3 A$$

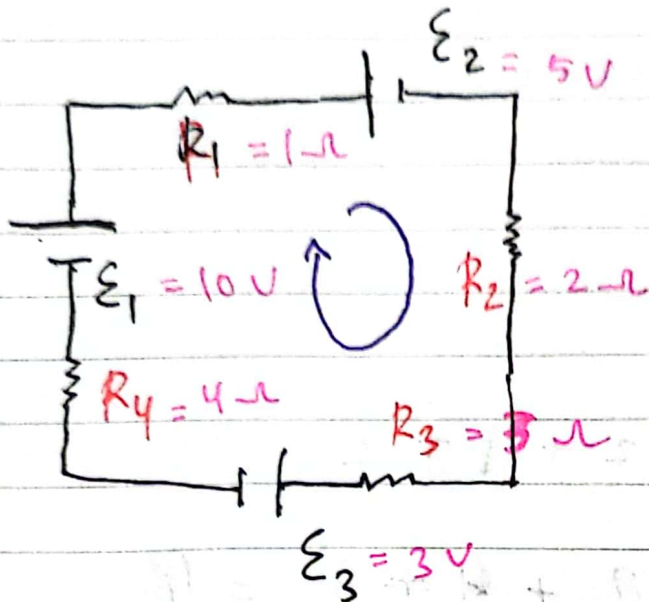
$$V_{R_1} = I \cdot R_1 = 3 \cdot 3 = 9 \text{ Volt}$$

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

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

Seri $\rightarrow$ arus sama, tegangan berbeda

Paralel $\rightarrow$ arus berbeda, tegangan sama



$$\varepsilon_1 > \varepsilon_2 > \varepsilon_3$$

1). Gambar arah arus
Sesuai dg besarnya ε .

2). Gambar loop Sesuka hatiku.

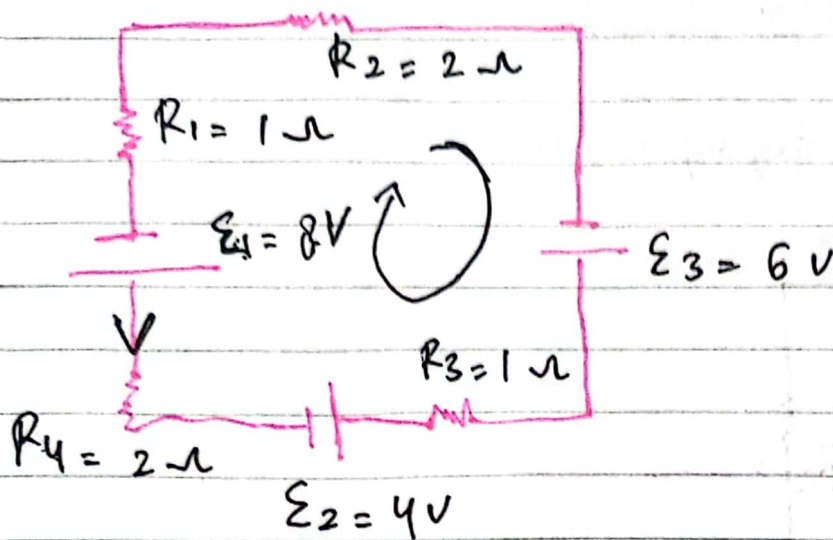
3). jika arah arus Searah dg arah loop, maka $\oplus$

$$\sum \varepsilon + \sum i \cdot R = 0$$

$$-\varepsilon_1 + \varepsilon_2 + \varepsilon_3 + I(R_1 + R_2 + R_3) = 0$$

$$R = 10 + 5 + 3 = -2$$

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



$$R_1 + R_2 + R_3 + R_4 = 1 + 2 + 1 + 2 = 6$$

$$\Sigma \mathcal{E} = 8 + 4 - 6 = 6$$

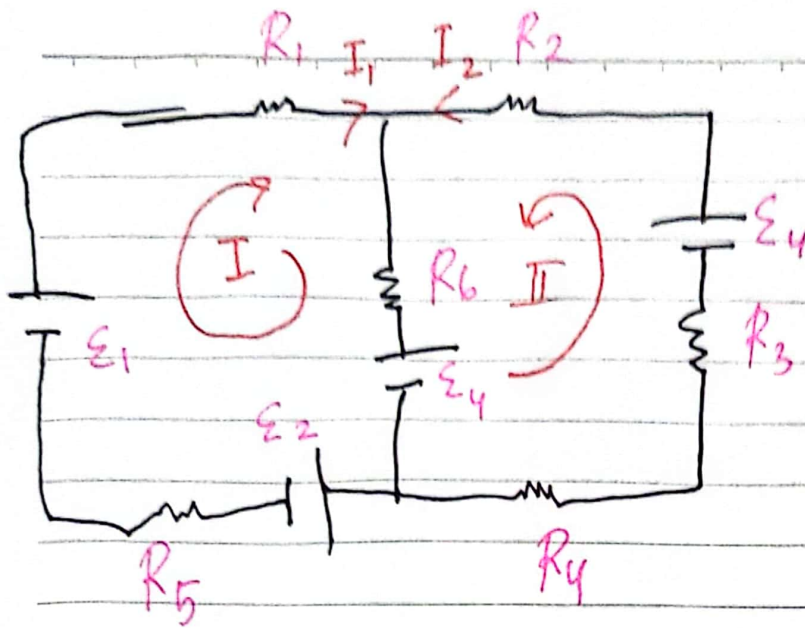
$$\Sigma \mathcal{E} + \Sigma I \cdot R = 0$$

$$\mathcal{E}_1 + \mathcal{E}_2 - \mathcal{E}_3 - I (R_1 + R_2 + R_3 + R_4) = 0$$

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

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

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



Loop I :

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

$$-\epsilon_1 + \epsilon_4 + \epsilon_2 + I_1 (R_1 + R_5) + I_3 R_6 = 0$$

Loop II :

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

$$-\epsilon_3 + \epsilon_4 + I_2 (R_2 + R_3 + R_4) + I_3 R_6 = 0$$