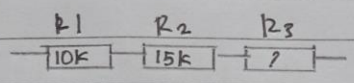
Rangkaian Seri

1.



V = 5V I ?

R_T = 30k Ω

jawab :

$R_T = R_1 + R_2 + R_3$

30k = 10k + 15k + R3

30k = 25k + R3

R_3 = 30k − 25k = 5k Ω

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

$= \frac{5}{30k} = 0,00016\ A$

2.

R1 = 25,5k Ω R2 = 70 Ω R3 = 150 Ω

V = 15v R_T = ? I = ?

jawab :

$R_T = R_1 + R_2 + R_3$

= 25,5k + 70 + 150

= 25,500 + 70 + 150

= 25,720 Ω

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

$= \frac{15}{25,720} = 0,00058\ A$

3.

V = 5v

R_T = 100k Ω I = ?

R_1 = 25k Ω R_2 = 15k Ω R_3 = ?

jawab :

$R_T = R_1 + R_2 + R_3$

100k = 25k + 15k + R3

100k = 40k + R3

R_3 = 100k − 40k = 60k Ω

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

$= \frac{5}{100k} = \frac{5}{100.000} = 0,00005\ A$

Nilai Resistor

1. Hijau - Orange - Hitam - Perak
   5 3 0 10%
   $R = 53 \times 10^0 = 53k\Omega$
   $53k\Omega - 10\%$ sampai $53k\Omega + 10\%$
   $47,7k\Omega$ sampai $58,3k\Omega$

2. kuning - Merah - Merah - Emas
   4 2 2 5%
   $R = 42 \times 10^2 = 4.200 = 4,2k\Omega$
   $4,2k\Omega - 5\%$ sampai $4,2k\Omega + 5\%$
   $3,99k\Omega$ sampai $4.41k\Omega$

3. Hijau - hijau - Orange - x
   5 5 3 20%
   $R = 55 \times 10^3 = 55.000 = 55k\Omega$
   $55k\Omega - 20\%$ sampai $55k\Omega + 20\%$
   $44k\Omega$ sampai $66k\Omega$

4. Orange - Orange - kuning - Perak
   3 3 4 10%
   $R = 33 \times 10^4 = 330.000 = 330k\Omega$
   $330k\Omega - 10\%$ sampai $330k\Omega + 10\%$
   $297k\Omega$ sampai $363k\Omega$

5. Abu-abu - Hitam - Merah - Emas
   8 0 2 5%
   $R = 80 \times 10^2 = 8.000 = 8,0k\Omega$
   $8,0k\Omega - 5\%$ sampai $8,0k\Omega + 5\%$
   $7,6k\Omega$ sampai $8,4k\Omega$

6. Ungu - Hijau - Hitam - X
7 5 0 20%
$R = 75 \times 10^0 = 75\ \Omega = 75\ k\Omega$
$75k\Omega - 20\%$ sampai $75k\Omega + 20\%$
$60k\Omega$ sampai $90k\Omega$

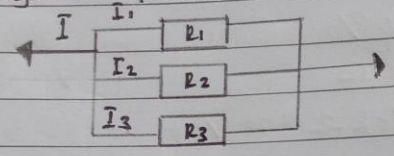
7. Ungu - Merah - Ungu - Perak
7 2 7 10%
$R = 72 \times 10^7 = 720.000.000 = 720\ M\Omega$
$720M\Omega - 10\%$ sampai $720M\Omega + 10\%$
$648M\Omega$ sampai $792\ M\Omega$

8. Hijau - Hijau - Hijau - X
5 5 5 20%
$R = 55 \times 10^5 = 5.500.000 = 5{,}5M\Omega$
$5{,}5M\Omega - 20\%$ sampai $5{,}5M\Omega + 20\%$
$4{,}4M\Omega$ sampai $6{,}6M\Omega$

9. Biru - Hijau - Ungu - Emas
6 5 7 5%
$R = 65 \times 10^7 = 650.000.000 = 650M\Omega$
$650M\Omega - 5\%$ sampai $650M\Omega + 5\%$
$617{,}5M\Omega$ sampai $682{,}5M\Omega$

10. kuning - Hijau - Biru - X
4 5 6 20%
$R = 45 \times 10^6 = 45.000.000 = 45M\Omega$
$45M\Omega - 20\%$ sampai $45M\Omega + 20\%$
$36M\Omega$ sampai $54M\Omega$

Rangkaian Paralel



1. Vab = 15V

$R_1 = 15k\Omega$ $R_2 = 50\Omega$ $R_3 = 100\Omega$ $R_T = ?$

Jawab:

$$\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$$

$$= \frac{1}{15k} + \frac{1}{50} + \frac{1}{100} \rightarrow \text{cari kpk}$$

$$= \frac{1}{15k} + \frac{300}{15k} + \frac{150}{15k}$$

$$= \frac{451}{15k}$$

$$R_T = \frac{15k}{451} = 33,2\Omega$$

2. Vab = 5V $R1 = 10\Omega$ $R_2 = 150k\Omega$ $R_3 = 200\Omega$

$I_1 = 0,5A$ $R_T = ?$

Jawab:

$$\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$$

$$= \frac{1}{10} + \frac{1}{150k} + \frac{1}{200} \rightarrow \text{cari kpk}$$

$$= \frac{15k}{150k} + \frac{1}{150k} + \frac{750}{150k}$$

$$= \frac{15.751}{150k}$$

$$R_T = \frac{150k}{15,751} = 9.52\Omega$$

3. $V_{ab} = 5V$ $R_1 = 150k\Omega$ $R_2 = 25k\Omega$ $R_3 = 100\Omega$

$I_1 = ?$ $I_2 = ?$ $I_3 = ?$

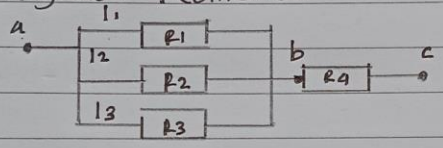
jawab :

$I_1 = \frac{V_{ab}}{R_1} = \frac{5}{150.000} = 3,33\,A$

$I_2 = \frac{V_{ab}}{R_2} = \frac{5}{25.000} = 0,0002\,A$

$I_3 = \frac{V_{ab}}{R_3} = \frac{5}{100} = 0,05\,A$

Rangkaian Kombinasi



1. $R_1 = 100\Omega$ $R_2 = 1k\Omega$ $R_3 = 15k\Omega$ $R_4 = 100k\Omega$ $R_T = ?$

Cari R Paralel

$\frac{1}{R_p} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$

$= \frac{1}{100} + \frac{1}{1k} + \frac{1}{15k}$ → Cari kpk

$= \frac{150}{15k} + \frac{15}{15k} + \frac{1}{15k} = \frac{166}{15k} = \frac{15k}{166} = 90,3\,\Omega$

$R_T = R_p + R_4$

$= 90,3\,\Omega + 100k\,\Omega$

$= 100.090,3\,\Omega$

2. $I = 2A$ $V_{bc} = ?$

jawab :

$V = I \cdot R$

$V_{bc} = I \cdot R_4$

$= 2 \cdot 100k\Omega$

$= 200.000$ $V = 200kV$

3. $R_1 = 100k\Omega$ $R_2 = 47k\Omega$ $R_3 = ?$ $R_4 = 150k\Omega$

bila $I = 2A$ $V_{ac} = 15V$

jawab :

$V_{ac} = 15V$

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

$R_3 = \frac{15}{2}$

$R_3 = 7,5\Omega$