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Memo No. \_\_\_\_\_

Date     /     /

③. Dik :  $R = 48 \, \Omega$

$V = 240 \, V$

$t = 2 \, s$

Dit :  $W = \dots ?$

$$W = \frac{V^2 \cdot t}{R}$$

$$= \frac{(240)^2 \cdot 2}{48}$$

$$= 1.200 \cdot 2$$

$$= 2.400 \text{ joule.}$$

④. Dik :  $R = 5 \, \Omega$

$t = 2 \text{ menit} \rightarrow 120 \, s$

$W = 9600 \, J$

Dit :  $I \dots ?$

$$W = I^2 \cdot R \cdot t$$

$$I^2 = \frac{W}{R \cdot t}$$

$$= \frac{9600 \, J}{5 \cdot 120}$$

$$= 16 \, A$$

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Nama: Tri Utami Mita.5

NPM: 2123025003

## Uts Elektrodinamika

①. B

②. Dik:

$$r_1 = 2 \text{ m}$$

$$r_2 = 2 \cdot r_1$$

$$F_2 = \dots ?$$

Jawab:

$$F = k \cdot \frac{q_1 \cdot q_2}{r^2}$$

$$\frac{F_1}{F_2} = \frac{k \cdot \frac{q_1 \cdot q_2}{r^2}}{k \cdot \frac{q_1 \cdot q_2}{r^2}}$$

$$\frac{F_1}{F_2} = \frac{r_2^2}{r_1^2}$$

$$\frac{F_1}{F_2} = \frac{(2r_1)^2}{r_1^2}$$

$$F_1 \cdot r_1^2 = F_2 \cdot 4r_1^2$$

$$F_2 = \frac{1}{4} F_1$$

$$= 0,25 \text{ E}$$

③.  $Q_1 = 9 \text{ C}$

$$Q_2 = 6 \text{ C}$$

$$r = 3 \text{ m}$$

$$k = 9 \times 10^9 \text{ Nm}^2 \text{ C}^{-2}$$

$$F = ?$$

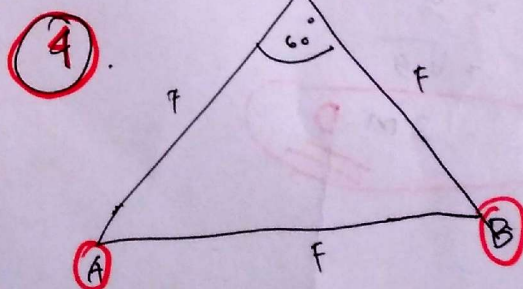
Jawab:

$$F = k \cdot \frac{q_1 \cdot q_2}{r^2}$$

$$= 9 \times 10^9 \frac{(9 \cdot 6)}{(3)^2}$$

$$= 9 \times 10^9 \cdot \frac{54}{9}$$

$$= 54 \times 10^9 \text{ N}$$



$$F_c = \sqrt{F_{Ac}^2 + F_{Bc}^2 + 2 \cdot F_{Ac} \cdot F_{Bc} \cos 60}$$

$$F_c = \sqrt{F^2 + F^2 + 2 \cdot F \cdot F \cdot \frac{1}{2}}$$

$$F_c = \sqrt{3F^2}$$

$$= F\sqrt{3} \text{ E}$$



$$5. F = \frac{k}{\epsilon} \times \frac{Q_1 \cdot Q_2}{r^2}$$

$$= \frac{9 \times 10^9}{3} \times \frac{(2 \times 10^{-5})(24 \times 10^{-6})}{(12 \times 10^{-2})^2}$$

$$F = 100 \text{ N} \quad \underline{\underline{C}}$$

$$9. F = k \cdot \frac{q_1 \cdot q_2}{r^2}$$

$$0,025 = \frac{(9 \times 10^9) \cdot (5 \times 10^{-6})(5 \times 10^{-6})}{r^2}$$

$$0,025 = \frac{225 \times 10^{-3}}{r^2}$$

$$0,025 r^2 = 0,225$$

$$r^2 = \frac{0,225}{0,025}$$

$$r^2 = 9$$

$$r = \sqrt{9}$$

$$r = 3 \text{ m} \quad \underline{\underline{D}}$$

$$6. F_{13} = \frac{k q_1 \cdot q_2}{r^2}$$

$$= \frac{9 \times 10^9 \cdot 9 \times 10^{-6} \cdot 5 \times 10^{-6}}{(0,25)^2}$$

$$= \frac{405 \times 10^{-3}}{6,25 \times 10^{-2}}$$

$$= 64,8 \times 10^{-1} \text{ N}$$

$$F_{23} = k \cdot \frac{q_2 \cdot q_3}{r^2}$$

$$= \frac{9 \times 10^9 \cdot 9 \times 10^{-6} \cdot 5 \times 10^{-6}}{(0,25)^2}$$

$$= \frac{180 \times 10^{-3}}{6,25 \times 10^{-2}}$$

$$= 28,8 \times 10^{-1} \text{ N}$$

$$F_{\text{total}} = F_{13} - F_{23}$$

$$= (64,8 \times 10^{-1} \text{ N}) - (28,8 \times 10^{-1} \text{ N})$$

$$= 3,6 \times 10^{-1} \text{ N Kekiri}$$

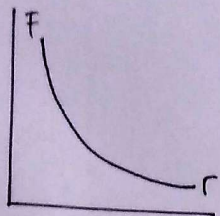
$$= 3,6 \text{ ke Kiri} \quad \underline{\underline{B}}$$

16.



Essai

①



$$\Rightarrow F = k \cdot \frac{q_1 \cdot q_2}{r^2}$$

$$F = \frac{1}{r^2}$$

②

$$Q_1 = +8C$$

$$Q_2 = -4C$$

$$r = 2m$$

$$F = \dots ?$$

Jawab =

$$F = k \cdot \frac{q_1 \cdot q_2}{r^2}$$

$$F = 9 \times 10^9 \cdot \frac{8 \cdot (-4)}{(2)^2}$$

$$F = 9 \times 10^9 \cdot \frac{(-32)}{4}$$

$$F = -72 \times 10^9$$

③

$$Q_1 = 24C$$

$$Q_2 = 18C$$

$$r = 12m$$

$$\text{Dit } A. F \dots ?$$

$$B. \Sigma ?$$

③

$$A. F = k \cdot \frac{q_1 \cdot q_2}{r^2}$$

$$= 9 \times 10^9 \cdot \frac{24 \cdot 18}{(12)^2}$$

$$= 9 \times 10^9 \cdot \frac{432}{144}$$

$$= 9 \times 10^9 \cdot 3$$

$$= 27 \times 10^9$$

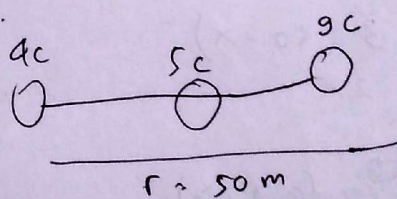
$$B. F = \frac{k}{\epsilon}$$

$$\epsilon = \frac{k}{F}$$

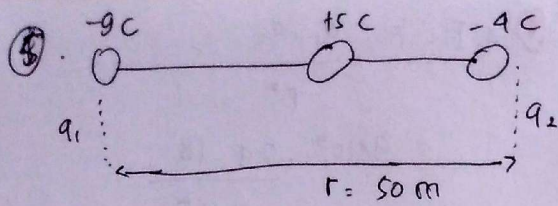
$$= \frac{9 \times 10^9}{27 \times 10^9}$$

$$= -3 \mu\epsilon$$

④







- $q_1 = -9C$
- $q_2 = -4C$
- $q_3 = +5C$
- $r_{12} = 50m$

Dit:  $r_{13}$  dan  $r_{23} \dots ?$

$$\bullet \sum F_{13} = 0$$

$$-F_{13} + F_{23} = 0$$

$$F_{13} = F_{23}$$

$$\frac{k \cdot q_1 \cdot q_3}{r_{13}^2} = \frac{k \cdot q_2 \cdot q_3}{r_{23}^2}$$

$$= \cancel{9} \cdot \frac{-9}{x^2} = \frac{-4}{(50-x)^2}$$

$$= \frac{3}{x} \times \frac{2}{50-x}$$

$$= 3(50-x)^{-1}$$

$$= 2x$$

$$9 \cdot \frac{1}{150-3x} = 2x$$

$$150 - 3x = 2x$$

$$150 = 2x + 3x$$

$$150 = 5x$$

$$x = 30 \text{ m.}$$

a)  $r_{13} = x = 30 \text{ m dari } q_1$

b)  $r_{23} = 150 - x$   
 $= 150 - 30$   
 $= 120 \text{ m}$