

Nama : Ade Hürnat

Kelas : TIF K 22B

NPM : 2255201130

1. Dik : $s_{155} = 0.50 \text{ m} = 0.25 \text{ m}^2$

$$Q_A = 200 \text{ nC} = 200 \times 10^{-6} \text{ C}$$

$$Q_B = 400 \text{ nC} = 400 \times 10^{-6} \text{ C}$$

$$Q_C = 700 \text{ nC} = 700 \times 10^{-6} \text{ C}$$

Jawab : Sudut = 60°

$$F_{AB} = k \frac{Q_A \cdot Q_B}{s_{155}}$$

$$= 9 \times 10^9 \text{ Nm}^2/\text{C}^2 \frac{200 \times 10^{-6} \text{ C} \cdot 400 \times 10^{-6} \text{ C}}{0.25 \text{ m}^2}$$

$$= \text{N} \cdot \frac{800 \times 10^{-6} \text{ C}}{0.25 \text{ m}^2}$$

$$= 320.000 \text{ N}$$

$$F_{AC} = k \frac{Q_A \cdot Q_C}{m^2}$$

$$= 9 \times 10^9 \text{ Nm}^2/\text{C}^2 \frac{200 \times 10^{-6} \text{ C} \cdot 700 \times 10^{-6} \text{ C}}{0.25 \text{ m}^2}$$

$$= \text{N} \cdot \frac{1400 \times 10^{-6} \text{ C}}{0.25 \text{ m}^2}$$

$$= 560.000 \text{ N}$$

Gaya Resultan F

$$\begin{aligned}
 F &= \sqrt{F_{AB}^2 + F_{AC}^2 + 2 \cdot F_{AB} \cdot F_{AC} \cdot \cos 60^\circ} \\
 &= \sqrt{(32 \times 10^4)^2 + (56 \times 10^4)^2 + 2 \cdot 32 \times 10^4 \cdot 56 \times 10^4 \cdot \frac{1}{2}} \\
 &= \sqrt{32 \times 10^6 \text{ N}^2 + 56 \times 10^6 \text{ N}^2 + 2176 \times 10^4 \text{ N}^2} \\
 &= \sqrt{88 \times 10^6 \text{ N}^2} = 2176 \times 10^4 \text{ N}^2 \\
 &= \sqrt{8800 \text{ N}^2} = 2176 \text{ N}^2 \\
 &= \sqrt{6624 \text{ N}^2}
 \end{aligned}$$

~~Jadi besar gaya pada QA sebesar $\sqrt{6624}$~~

$$= 66.24 \text{ N}$$

Jadi gaya pada QA sebesar 66.24 N

②. a. Dik : $q_1 = 2.50 \text{ nC} = 2.50 \times 10^{-6} \text{ C}$

$$q_2 = -400 \text{ nC} = 400 \times 10^{-6} \text{ C}$$

$$r = 0.25 \text{ m} = 0.0625 \text{ m}^2$$

Dit : E ?

$$a. E = k \frac{q_1 \times q_2}{r^2}$$

Date. :

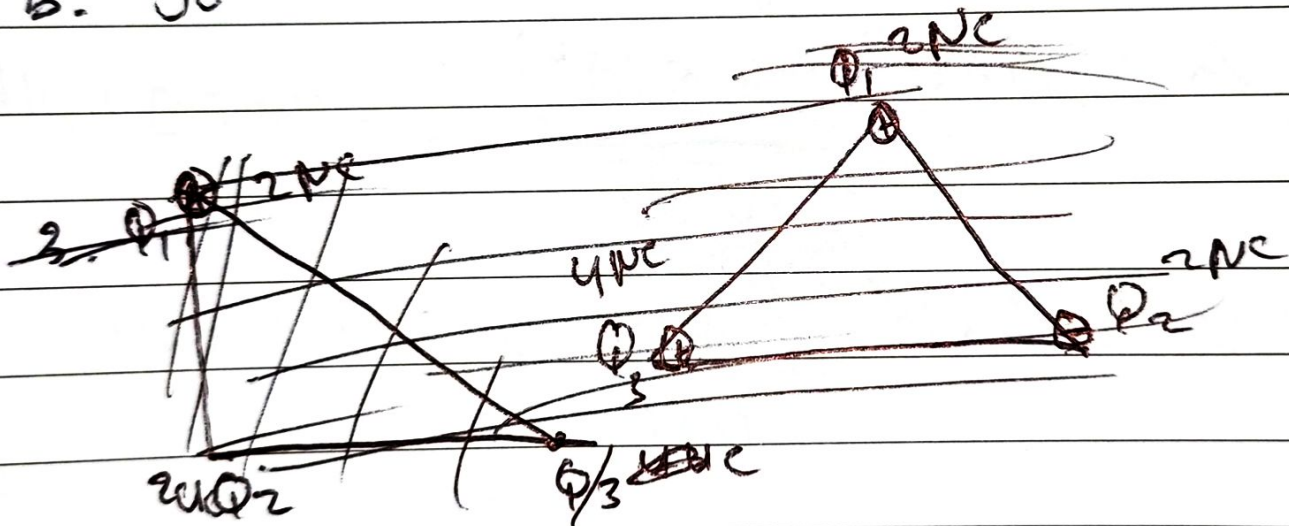
$$= 9 \times 10^9 \text{ Nm}^2/\text{C}^2 \frac{200 \times 10^{-6} \text{ C}, 400 \times 10^{-6} \text{ C}}{0.0625 \text{ m}^2}$$

$$= N \frac{800 \times 10^{-6} \text{ C}}{0.0625 \text{ m}^2}$$

$$= N \frac{8 \times 10^{-4} \text{ C}}{6.25 \text{ m}^2} = N \frac{8 \times 10^{-4}}{6.25 \text{ m}^2}$$

$$= 128 \text{ N}$$

b. 90°



3. (a). $q_1 = 2 \times 10^{-6} \text{ C}$
 $q_2 = -2 \times 10^{-6} \text{ C}$
 $q_3 = 4 \times 10^{-6} \text{ C}$

No.:

Date.:

$$R_1 = |(3\hat{i} + 3\hat{j}) - (-2\hat{i})| = |5\hat{i} + 3\hat{j}| = \sqrt{5^2 + 3^2} \\ = \sqrt{34} \text{ m}$$

$$R_2 = |(3\hat{i} + 3\hat{j}) - (4\hat{i} - 3\hat{j})| = |-\hat{i} + 6\hat{j}| = \sqrt{1^2 + 6^2} \\ = \sqrt{37} \text{ m}$$

$$R_3 = |(3\hat{i} + 3\hat{j}) - (-\hat{i} + 4\hat{j})| = |4\hat{i} - \hat{j}| = \sqrt{4^2 + 1^2} \\ = \sqrt{17} \text{ m}$$

$$V_1 = 9 \times 10^9 \frac{(2 \times 10^{-6})}{\sqrt{34}} = 3087 \text{ Volt}$$

$$V_2 = 9 \times 10^9 \frac{(-2 \times 10^{-6})}{\sqrt{37}} = -2959 \text{ Volt}$$

$$V_3 = 9 \times 10^9 \frac{4 \times 10^{-6}}{\sqrt{17}} = 9295 \text{ Volt}$$

c) Potential total

$$3087 - 2959 + 9295 = 9423 \text{ Volt}$$

No. :

Date. :

4. ~~Q~~ $C = \epsilon_0 \epsilon_r A / d$

$$= \frac{(8.854 \times 10^{-12} \text{ C}^2 / \text{N} \cdot \text{m}^2) \times 7 (0.1 \text{ m} \times 0.1 \text{ m})}{0.005 \text{ m}}$$

$$= 1.6 \times 10^{-10} \text{ F}$$