Nanda Wiguna Putri Kusuma
2123025001

1. The object is positively charged when the number of protons exceeds the number of electrons. In other words, it is lacked of electrons.
Answer: B //

2. Forces between charges:

$F_{elect} = \frac{k \cdot Q_1 Q_2}{r^2}$

double the distance, the force will be $F_{elect\ final} = F_{init} \cdot \frac{r^2}{(2r)^2}$

$F_{elect\ final} = \frac{1}{4} F_{init}$

Answer: E. 0,25 //

3. $F_{elect} = \frac{k \cdot Q_1 \cdot Q_2}{r^2}$

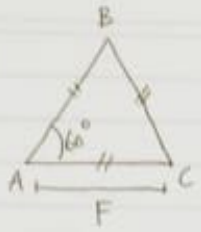
$= \frac{9 \cdot 10^9 \cdot 9 \cdot 10^{-6} \cdot 6 \cdot 10^{-6}}{3^2}$

$= 54 \cdot 10^{-3}$

$= 0,054\ N$ (A) //

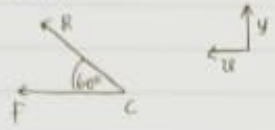
PAPERLINE

4.



Question:
In point C, how much is the resultant force?

Answer



at x axis

$\Sigma F_x = F + F \cos 60°$

$= F + \frac{1}{2} F$

$= \frac{3}{2} F$

at y axis

$\Sigma F_y = F \sin 60°$

$= \frac{F}{2} \sqrt{3}$

Force Resultant

$F_c = \sqrt{F_x^2 + F_y^2}$

$= \sqrt{\frac{9}{4} F^2 + \frac{3}{4} F^2}$

$= F\sqrt{3}$ (E)

tant force?

No.

Date :

5. $q_1 = 24.10^{-6}$ C $q_2 = 20.10^{-6}$ C $\varepsilon_r = 3$

$r = 12.10^{-2}$ m $k = 9.10^9$ N m²/C²

Force = ?

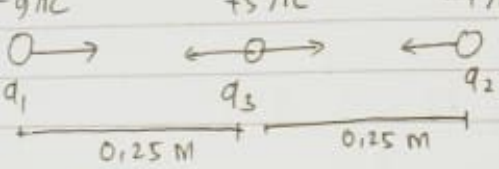
Answer :

$$F = \frac{9.10^9 . \ 24.10^{-6} . \ 20.10^{-6}}{3\ (12.10^{-2})^2}$$

$= 10.10$

$= 100$ N (c)

6. $-9\,\mu C$ $+5\,\mu C$ $-4\,\mu C$



Jawab: $F_1 = k \cdot \dfrac{q_1 \cdot q_3}{(r_{13})^2}$

$= 9.10^9 \cdot \dfrac{9.10^{-6} \cdot 5.10^{-6}}{(0,25)^2}$

$= 6,48\ N$

$F_2 = k \cdot \dfrac{q_2 \cdot q_3}{(r_{23})^2}$

$= 9.10^9 \cdot \dfrac{4.10^{-6} \cdot 5.10^{-6}}{(0,25)^2}$

$= 2,88\ N$

Maka $F_3 = F_1 - F_2$

$= 6,48\ N - 2,88\ N$

$= 3,6\ N$ ke kiri (B)

8. 2 μC (A) 3 μC (C) 8 μC (B)

$$F_{ac} = \frac{q_a \cdot q_c}{r_{ac}^2}$$

$$F_{ab} = \frac{q_c \cdot q_b}{r_{ab}^2}$$

$$\frac{24}{(r_{ab})^2} = \frac{6}{(r_{ac})^2}$$

$$4(r_{ac})^2 = (r_{ab})^2$$

$$4 r_{ac}^2 = r_{ab}^2$$

$$r_{ac} = 1/2.$$

PAPERLINE

$= 100\ N$ (c)

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

$25 \cdot 10^{-3} = \frac{9 \cdot 10^9 \cdot (5 \cdot 10^{-6})^2}{r^2}$

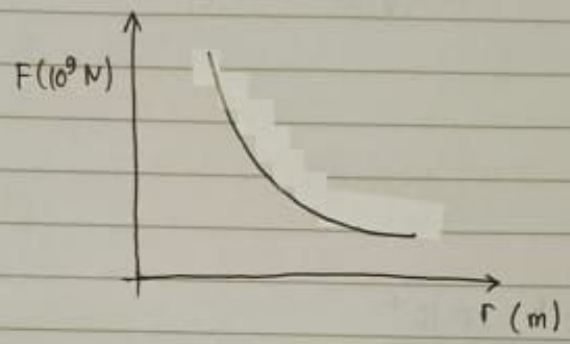
$25 \cdot 10^{-3}\ r^2 = 9 \cdot 10^9 \cdot 25 \cdot 10^{-12}$

$r^2 = 9$

$r = 3\ m$ (D)

Essay :

1)



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

$= 9 \cdot 10^9 \cdot \frac{8 \cdot 10^{-6} \cdot X \cdot 10^{-6}}{2^2}$

$= 9 \cdot 10^9 \cdot 8 \cdot 10^{-6} \cdot 10^{-6}$

$= 72 \cdot 10^{-3}$

$= 0,072 \text{ N} //$

3. a) $F = k \frac{q_1 . q_2}{r^2}$

$= \frac{9.10^9 . 24.10^{-6} . 18.10^{-6}}{(12)^2}$

$= 27.10^{-3}$ N

b) $F = \frac{9.10^9 . 24.10^{-6} . 18.10^{-6}}{2(12)^2}$

$= 13,5 \cdot 10^{-3}$ N //