

17 B The object has the lack of electron

↳ When object has the positive charge it's mean like the object release a number of electron.

27 Diketahui

$$\cdot r_1 = 2m$$

$$\cdot r_2 = 2r_1$$

$$\cdot F_2 = \dots ?$$

$$F = \frac{k \cdot q_1 \cdot q_2}{r^2} = \frac{F_1}{F_2} = \frac{k \cdot q_1 \cdot q_2}{r_1^2}$$

$$\frac{k \cdot q_1 \cdot q_2}{r_2^2}$$

$$\frac{F_1}{F_2} = \frac{r_2^2}{r_1^2} = \frac{F_1}{F_2} = \frac{r_2^2}{r_1^2} = \left(\frac{2r_1}{r_1} \right)^2$$

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

$$F_2 = \frac{1}{4} F_1 = 0,25 \text{ (E)}$$

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

$$= 9 \times 10^9 \cdot 8 \times 10^{-6} \cdot 6 \times 10^{-6} / 2$$

$$= 54 \cdot 10^9 \cdot 10^{-6} \cdot 10^{-6} / 2$$

$$= 54 \cdot 10^{-3} = 0,054 \text{ (CA)}$$

27 Jika pada muatan A adanya tolak menolak dengan muatan B dengan gaya sebesar

$$F_{AB} = k \times q_A \times q_B / r^2$$

$$F = k \times q_1 \times q_2 / r^2$$

Muatan A mengalami interaksi tolak menolak dengan

Muatan B dengan gaya sebesar

$$F_{AC} = k \times q_A \times q_C / r^2$$

$$F = k \times q_1 \times q_2 / r^2$$



Resultan gaya yg dialami muatan di titik A

$$F_{C2} = F_{ab2} + F_{bc2} + 2 \times F_{ab} \times F_{ac} \times \cos 60^\circ$$

$$F_{C2} = F_2 + F_2 + 2 \times F \times F \times \frac{1}{2}$$

$$F_{C2} = 3F_2$$

$$F_C = F\sqrt{3}$$

Ⓢ

$$\begin{aligned} b) F &= \frac{k}{a} \times \frac{q_1 q_2}{r_2} \\ &= \frac{9 \times 10^9}{3} \times \frac{(2 \times 10^{-5})(24 \times 10^{-6})}{(12 \times 10^{-2})^2} \\ &= 100 \text{ H} \quad \text{Ⓢ} \end{aligned}$$

c) jawab

$$\begin{aligned} F_1 &= \frac{k \cdot q_1 q_3}{(r_{13})^2} & F_2 &= \frac{k \cdot q_2 q_1}{(r_{23})^2} \\ &= \frac{9 \cdot 10^9 \cdot 5 \times 10^{-6} \cdot 5 \times 10^{-6}}{(0,25)^2} & &= \frac{5 \times 10^9 (4 \times 10^{-6} \cdot 5 \times 10^{-6})}{(0,25)^2} \\ &= \frac{405 \cdot 10^{-3}}{625 \cdot 10^{-4}} & &= \frac{5 \times 10^5 \cdot 20 \times 10^{-12}}{0,0625} \\ &= 6,48 \text{ H} & F_2 &= \frac{180 \cdot 10^{-3}}{0,25 \cdot 10^{-4}} = 2,88 \text{ N} \end{aligned}$$

$$F_3 = F_1 - F_2 = 6,48 - 2,88 = 3,6 \text{ N} \quad \text{Ⓢ} \quad \text{(B)}$$

d)

$$\begin{aligned} a) F_{ac} &= \frac{k \cdot ab \cdot ac}{r_2} \\ &= \frac{9 \times 10^9 \text{ Nm}^2 \cdot \text{C}^{-2} \cdot 20 \times 10^{-5} \cdot 30 \times 10^{-5} \text{ C}}{(2 \times 10^{-2})^2 \text{ m}^2} \\ &= \frac{16 \cdot 200 \times 10^{-5} \text{ N}}{4 \times 10^{-4}} = 40,5 \times 10^{-3} \text{ N} \\ F_C &= \sqrt{F_{ac}^2 + F_{bc}^2} = \sqrt{13,5 \times 10^{-3} \text{ N} + 40,5 \times 10^{-3} \text{ N}} = 2,3 \text{ H} \quad \text{Ⓢ} \end{aligned}$$

8)

$$x = 0,33r$$

$$\text{urutan} = q_a = -2 \text{ Mc} \quad q_c = +1 \text{ Mc}$$

$$q_b = -8 \text{ Mc} \quad \text{dari } q_c$$

jawab

$$F = k \cdot q_1 \cdot q_2 \cdot \frac{1}{r^2}$$

$$F_{ca} = F_{cb}$$

$$\frac{k \cdot q_c \cdot q_a}{x^2} = \frac{k \cdot q_c \cdot q_b}{(r-x)^2}$$

$$\frac{q_a}{x^2} = \frac{q_b}{(r-x)^2}$$

$$\frac{2}{x^2} = \frac{8}{(r-x)^2}$$

$$\frac{1}{x^2} = \frac{4}{(r-x)^2}$$

$$\frac{1}{x^2} = \frac{4}{(r-x)^2}$$

$$\frac{1}{x} = \frac{2}{(r-x)^2}$$

$$2x = r-x$$

$$3x = r$$

$$x = \frac{1}{3}r$$

$$x = 0,33r$$

9) D. 3 m

$$dik = q_1 = 5 \text{ Mc}$$

$$q_2 = 5 \text{ Mc}$$

$$F = 0,025 \text{ N}$$

jawab

$$F = k \cdot q_1 \cdot q_2 \cdot \frac{1}{r^2}$$

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

$$r^2 = 9 \times 10^9 \cdot 1000 \cdot 10^{-12}$$

$$r^2 = 9$$

$$r = 3$$

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

$$10) \text{ diketahui : } q_1 = q_3 = 50 \text{ Mc} = 5 \times 10^{-5}$$

$$q_2 = 40 \text{ Mc} = 4 \times 10^{-5}$$

jawab

$$F = k \cdot q_1 \cdot q_2 \cdot \frac{1}{r^2}$$

$$= \frac{9 \times 10^9 \cdot 5 \times 10^{-5} \cdot 4 \times 10^{-5}}{(5^2)}$$

$$= \frac{180 \cdot 10^{-1}}{25}$$

Essay

$$17 \quad F = \frac{k \cdot q_1 q_2}{r^2}$$
$$= \frac{1}{r^2}$$

$$3) \quad A \cdot F = \frac{k \cdot q_1 q_2}{r^2}$$
$$= 9 \times 10^9 \cdot \frac{24.18}{(0.2)^2}$$

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

$$= 27 \times 10^9$$

$$13. \quad F = \frac{k}{\epsilon}$$

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

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

$$= 0.33$$

$$Q7 \quad F = \frac{k \cdot q_1 \cdot q_2}{r^2}$$

$$= \frac{9 \times 10^9 \cdot 8 \times 10^{-6} \times 4 \times 10^{-6}}{25}$$

$$= \frac{9 \cdot 10^9 \cdot 8 \times 10^{-6} \cdot 10^{-6}}{25}$$

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

$$= 0.072 \text{ N}$$

17