

task_5u1zbroaz75w39jk_with_calculation

Student Group

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$$F_{01,x} = \frac{1}{4\pi\epsilon_0} \frac{q_1 q_0}{r_{01}^2} = \frac{1}{4\pi \cdot 8.854 \cdot 10^{-12}} \frac{1 \cdot 10^{-9} \cdot 5 \cdot 10^{-9}}{(7 \cdot 10^{-3})^2} = 917.4 \cdot 10^{-6} \frac{(As)^2 \cdot Vm}{As \cdot m^2} = 917.4 \cdot 10^{-6} \frac{VAs}{m} = 917.4 \cdot 10^{-6} \frac{Ws}{m} = +917.4 \mu N$$
 Since both q_0 and q_1 have the same sign for their charges, they are repelling each other. Therefore, The force \vec{F}_{01} points to the right (positive value).

Similarly, we get for \vec{F}_{02} and \vec{F}_{03}

$$\vec{F}_{02} = F_{02,x} = -1997.4 \mu N \quad \vec{F}_{03} = F_{03,y} = -1123.4 \mu N$$
 Since q_0 and q_2 have the different sign for their charges, they are attract each other. Therefore, The force \vec{F}_{02} points to the left (negative value).
 Since q_0 and q_3 have the different sign for their charges, they are attract each other. Therefore, The force \vec{F}_{03} points downwards (negative value).

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