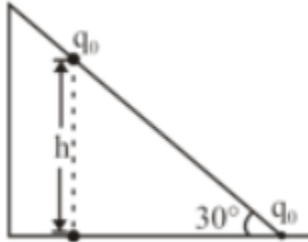
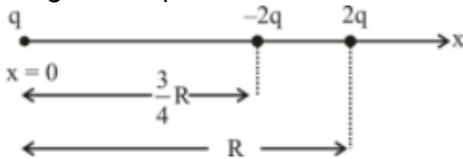


BCM SCHOOL, BASANT AVENUE, DUGRI ROAD, LUDHIANA
HOLIDAYS HOMEWORK
SUBJECT - PHYSICS
CLASS - XII

1. As shown in the figure. A configuration of two equal point charges ($q_0 = +2\mu\text{C}$) is placed on an inclined plane. Mass of each point charge is 20 g. Assume that there is no friction between charge and plane. For the system of two-point charges to be in equilibrium (at rest) the height $h = x \times 10^{-3}$. Find the value of x



2. Three-point charges q , $-2q$ and $2q$ are placed on x -axis at a distance $x = 0$, $x = \frac{3}{4}R$ and $x = R$ respectively from origin as shown. If $q = 2 \times 10^{-6}\text{C}$ and $R = 2\text{ cm}$, what is the magnitude of net force experienced by the charge $-2q$.



3. A $10\ \mu\text{C}$ charge is divided into two parts and placed at 1 cm distance so that the repulsive force between them is maximum. Find the charges of the two parts
4. Charges on two identical metal balls are Q and $3Q$. They are kept at the same distance after an initial contact. What is the ratio of initial to final force?
5. Find the ratio of electrostatic force F_e and gravitational force F_g acting between a proton and an electron distant r from each other.
6. Two pith balls, each carrying charge $+q$ is hung from a hook by two strings. It is found that when each charge is tripled, the angle between the strings doubles. What was the initial angle between the strings?
7. Determine the ratio of the magnitudes of electrostatic force between two protons at a distance r apart to that between two electrons at the same distance of separation.
8. What will be the capacity of earth assuming it as a metallic sphere?
9. Two equal point charges each of $3\ \mu\text{C}$ are separated by a certain distance in meters. If they are located at $(i + j + k)$ and $(2i + 3j + k)$. find the electrostatic force between them
10. Two particles of charges $+e$ and $+2e$ are 16 cm away from each other. Where should another charge q be placed between them, so that the system remains in equilibrium?
11. The electrostatic force acting between two-point charges kept at a certain distance in vacuum is 16N. If the same two charges are kept at the same distance in a medium of dielectric constant 8. Find the electric force acting between them

GENERAL INSTRUCTIONS:

- (a) If both Assertion and Reason are correct and reason is the correct explanation of Assertion.
 (b) If both Assertion and Reason are correct, but Reason is not the correct explanation of Assertion
 (c) If Assertion is correct but Reason is incorrect
 (d) If both the Assertion and Reason are incorrect.
12. **Assertion:** The property that the force with which two charges attract or repel each other are not affected by the presence of a third charge.
Reason: Force on any charge due to a number of other charges is the vector sum of all the forces on that charge due to other charges, taken one at a time
13. **Assertion:** All the charges in a conductor get distributed on the whole of its outer surface.
Reason: In a dynamic system, charges try to keep their potential energy minimum.

14. **Assertion:** Electrons in the atom are held due to coulomb forces.

Reason: The atom is stable only because the centripetal force due to coulomb's law is balanced by the centrifugal force.

15. **Assertion:** Four-point charges q_1 , q_2 , q_3 and q_4 are as shown in figure. The flux over the shown Gaussian surface depends only on charges q_1 and q_2 .

Reason: Electric field at all points on Gaussian surface depends only on charges q_1 and q_2 .