Physics Assignment- 2   Class XII   Teacher: Mrs. Archna   Date: 07.04.2020

Topic: Electrostatics

Assignment-2
(Electrostatics).

Q1. Two charges +q each are kept at a distance d. A third charge Q is kept b/w them in such a way that total system remains in equilibrium. Find position, nature and magnitude of Q (in terms of q & d).

Q2. Find force at C.   +1μC D ... C +1μC   √2m   +2μcA √2m B +2μC

Q3. Find force at O. +2μc D ... C +1μc
If charge at O is +1μc   •O
A +1μc   B +2μc

• C (4,5)ᵐ

Q4. Find force at C.
Charges at A, B, C are
1μc, 3μc, 5μc resp.
A (1,1) m   • B (4,1)m

Q5. A charge P of mass 20gm is kept 10 cm below a charge Q, if P is stationary in air. Find charge of Q if charge of P is 20μc.

Q6. A charge q_1 of mass m is moving around a charge q_2 in a circle of radius r. q_2 is at centre. Prove that time period of q_1 is $T = \sqrt{\dfrac{16\pi^3 \varepsilon_0 m r^3}{q_1 q_2}}$

Q7. Plot a graph showing variation of coulomb force (F) versus $\left(\dfrac{1}{r^2}\right)$, where r is the distance b/w two charges of each pair of charges (1μc, 2μc) and (2μc, -3μc) & interpret the graphs.

Q8. Three point charges of +2μc, -3μc and -3μc are kept at vertices A, B and c resp. of an equilateral Δ of side 20cm as shown. What should be sign

and magnitude of charge to be placed at
midpoint (M) of side BC so that charge
at A remains in equilibrium.

$2\mu c$ A

$-3\mu c$ B $\xleftarrow{\qquad}$ 20 cm $\xrightarrow{\qquad}$ C $-3\mu c$

M