THE MILLENNIUM SCHOOL
CLASS XII- Session 2021-22
Assignment- I (PHYSICS)

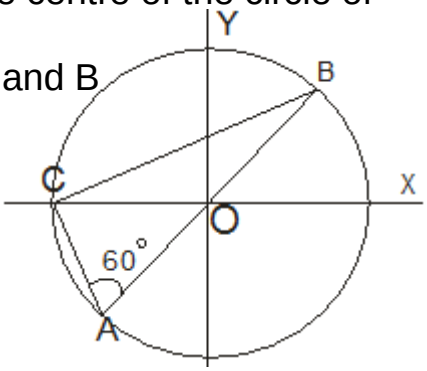
Q1. Two-point charges, QA = +8 μC and QB = -5 μC, are separated by a distance r = 10 cm. What is the magnitude of the electric force? The constant k = 8.988 x 10^9 Nm^2C^{-2} **4×10^{-9} N**

Q2. Three charged particles are arranged in a line as shown in figure below. Charge A = -5 μC, charge B = +10 μC and charge C = -12 μC. Calculate the net electrostatic force on particle B due to the other two charges. **550N**

Q3. Charges of magnitude 100 μC each are located in vacuum at the corners A, B and C of an equilateral triangle measuring 4 meters on each side. If the charge at A and C are positive and the charge B negative, what is the magnitude and direction of the total force on the charge at C? **5.625 N**

Q4. The negative point charges of unit magnitude and a positive point charge q are placed along the straight line. At what position and for what value of q will the system be in equilibrium? Check whether it is stable, unstable or neutral equilibrium.
q = 1/4 in magnitude of either charge.

Q5. Consider a system of three charges q/3, q/3 and –2q/3 placed at points A, B and C respectively as shown in the figure. Take O to be the centre of the circle of radius R and angle CAB = 60º
Calc.the magnitude of the force between the charges at C and B

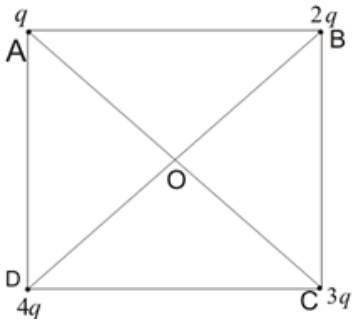


Q6. Two positive point charge are placed at the distance a apart have sum Q. What values of the charges, coulomb force between them is maximum?

Q7. A simple pendulum consists of a small sphere of mass and positive charge q is suspended by the string of length L. The pendulum is placed in the electric field of strength E directed vertically downwards. Calculate tension in the string & its time period.

Q8. Two point charges q_1 and q_2 are located with points having position vectors $\vec{r_1}$ and $\vec{r_2}$.
Find the position vector $\vec{r_3}$ where the third charge q_3 should be placed so that force acting on each of the three charges would be equal to zero.
Find the amount of charge q_3

Q9. Four charges q, 2q, 3q, 4q are placed at corners A, B, C and D of a square as shown below in the figure. Calculate the field at centre.



Q10. Twelve charges of charge q are situated at the corners of the 12 sided polygon of side a. What is the net force on the charge Q at the centre will be?

Date of Submission-* ***10/04/2021*
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