CAMBRIAN PUBLIC SCHOOL

KANKE ROAD, RANCHI

REVISION ASSIGNMENT

Subject: Physics (042) **Class: XII**

Chapter: Electric Charges and Fields

Very Short & Short Answer Questions

1) a) State the principle of **quantization of electric charge**.

b) Can a body have a net charge of 4.8×10^{-19} C? Justify mathematically.

2) Draw the electric field lines for:

a) Two equal and opposite point charges (an electric dipole).

b) Two equal positive point charges placed close to each other.

Short Answer Questions

3) Define an **electric dipole** and **electric dipole moment** ($\vec{p}$). Derive an expression for the electric field intensity at a point on the **axial line** of a short electric dipole.

4) State **Gauss's Law** in electrostatics. Using Gauss's Law, derive an expression for the electric field intensity due to an infinitely long, straight, uniformly charged wire having linear charge density λ.

Long Answer Question

5) a) Derive an expression for the **torque** ($\vec{\tau}$) acting on an electric dipole of dipole moment $\vec{p}$ placed in a niform electric field $\vec{E}$. Indicate the positions of stable and unstable equilibrium.

b) An electric dipole with dipole moment 4×10^{-9} C · m is aligned at an angle of 30° with the direction of a uniform electric field of magnitude 5×10^{4} N/C. Calculate the magnitude of the torque acting on the dipole.

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