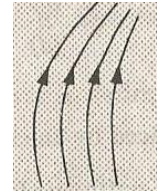➤ **ELECTRIC FIELD :**

Q.1: Electric field due to a source charge Q at the location of test charge q_0 is $\vec{E}$. What is the electric field due to this source charge if test charge is replaced by $-q_0$.

Q.2: Draw lines of force to represent a uniform electric field.   **CBSE**

Q.3: What is the nature of the electric field represented by the field lines shown in figure ?

Q.4: Define Electric field intensity. Give the S.I unit of electric field intensity.

Q.5: Name the physical quantity whose SI unit is
(i) Newton / Coulomb.   (ii) volt / metre.   **CBSE**

Q.6: What is the relation between electric field intensity and the force ?

Q.7: What is the direction of force acting on a charge 'q' placed in an electric field $\vec{E}$.

Q.8: Do free electrons travel to region of higher potential or lower potential?   **NCERT Exempler**

Q.9: The electric field $\vec{E}$ due to a point charge at any near it is defined as $\vec{E} = \underset{q_0 \to 0}{\text{Lim}} \dfrac{\vec{F}}{q}$ where 'q' is the test charge and F is the force acting on it. What is the physical significance of $\underrightarrow{\lim}$ in this expression.   **CBSE**

Q.10: If an oil drop of weigh 3.2×10^{-13} N is balanced in an electric field of 5×10^{6} V / m. Find the charge on the oil drop?   **[Ans: 6.4×10^{-19} C]**

Q.11: Calculate the electric field strength required to just support a water drop of mass 10^{-3} Kg and having a charge of 1.6×10^{-19} C.   **[Ans: 6.125×10^{16} N / C]**

Q.12: A free electron and a free proton are placed in a uniform field. Which of the two will experience greater force and greater acceleration ?

Q.13: Two point electric charges of unknown magnitude and sign are placed at a distance 'd' apart. The electric field intensity is zero at a point , not between the charges but on the line joining them. Write two essential conditions for this to happen.   **CBSE**

➤ **ELECTRIC FIELD DUE TO A POINT CHARGE :**

Q.14: What is the nature of symmetry of electric field due to a point charge ?

Q.15: Obtain the expression for electric field around a point charge.

Q.16: A point charge produces an electric field of magnitude 5.0 N/C at a distance of 40 cm from it. What is the magnitude of the charge?   **[Ans: 888×10^{-13} C]**

Q.17: Two point electric charges $+q$ and $+4q$ are separated by a distance of '6a'. Find the point on the line joining the two charges where the electric field is zero. **[Ans: 2a from charge 'q']**

Q.18: Two point charges of $+16\ \mu C$ and $-9\ \mu C$ are placed 8 cm apart in air. Determine the position of the point at which the resultant field is zero. **[Ans: 24 cm to the right of - 9μC]**

Q.19: Two point charges $q_1 = +0.2\ C$ and $q_2 = +0.4\ C$ are placed 0.1 m apart. Calculate the electric field at
(i) mid – point between the charges
(ii) a point joining q_1 and q_2 such that it is 0.05 m away from q_2 and 0.15 m away from q_1.
   [Ans: (i) $E = E_2 - E_1$, we get 7.2×10^{11} N / C (ii) $E = E_1 + E_2$, we get 1.52×10^{12} N / C]

➤ ELECTRIC LINES OF FORCE :

1 – MARKS QUESTION

Q.20: What is meant by electric field line ?

Q.21: Sketch the electric lines of force due to **CBSE**
(i) $q > 0$ (Single positive charge)   (ii) $q < 0$ (Single negative charge)
(iii) An electric dipole   (iv) Two equal positive charges
(v) Two equal negative charges   (vi) Unequal positive charges
(vii) Unequal negative charges   (viii) A uniform charged line
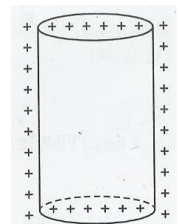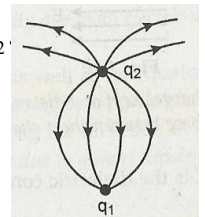(ix) A uniform charged sheet   (x) A uniformly positive charged spherical shell
(xi) A uniform negative charged spherical shell.

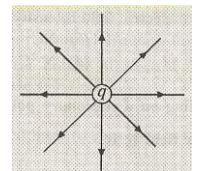**Q.22:** Sketch the electric field lines for a uniformly charged hollow cylinder shown in figure.   **NCERT Exemplar**

Q.23: Consider the situation shown in the figure below. What are the signs of q_1 and q_2.

Q.24: Electric field lines emitting from a charge 'q' are shown in figure. What is the sign of the charge q?

Q.25: Figure shows the field field lines on a positive charge. Is the work done by the field in moving a small positive charge from Q to P positive or negative? Give reason.   **HOTS**