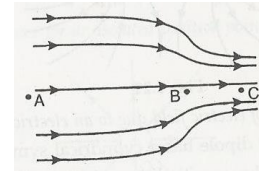➤ **PROPERTIES OF ELECTRIC LINES OF FORCE :**

Q.26: Mention any two properties of electric lines of force.

Q.27: In given fig. , at which point electric field is maximum? Why?

☑**Q.28:** No two electric field lines can intersect each other. Why ?

☑**Q.29:** An electrostatic field lines cannot be discontinuous. Why ?   **CBSE**

Ans: Because electric field is continuous in space and exists at all points in space.
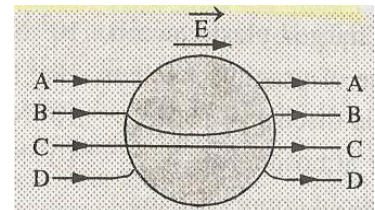If a line of force had a sudden break , it would indicate the absence of electric field in that region.
∴ an electric field line cannot have sudden breaks.

Q.30: Why do the electrostatic field lines not form closed loops?   **CBSE - AI**

Q.31: A solid metallic sphere is placed in a uniform electric field. **HOTS**
Which of the lines A , B , C and D shows the correct path and why ?

☑**Q.32:** A small test charge is released at a point in an electrostatic field configuration. Will it travel along the field line passing through that point ?

Ans: Not necessarily, because the field lines in general gives the direction of acceleration and not that of velocity.
If the field lines is a straight line, only then the particle will travel along the field line.

➤ **ELECTRIC DIPOLE :**

Q.33: What is the total charge on an electric dipole.

☑**(A)Q.34:** Which among the curves shown in figure cannot represent electrostatic field lines ?
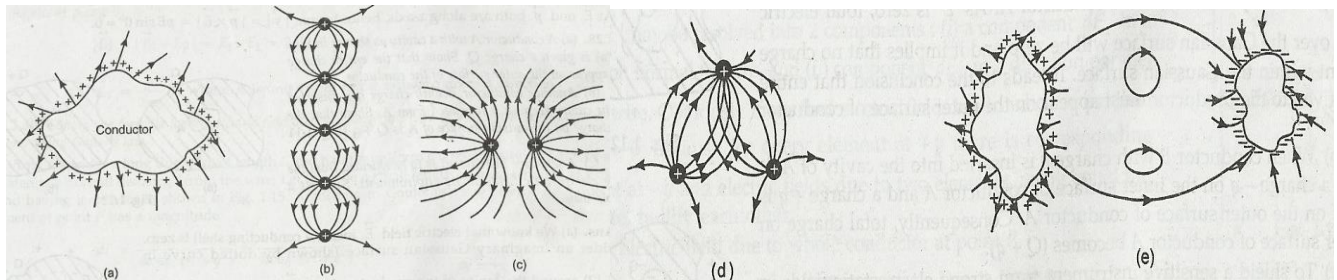
➤ **DIPOLE MOMENT :**

Q.35: Define the term electric dipole moment.   **CBSE**

Q.36: What is the SI unit of electric dipole moment ?   **CBSE**

Q.37: What is the direction of electric dipole moment vector ?

Q.38: Two charges , one +5 μC and - 5 μC are placed 4 mm apart. Calculate the dipole moment and give its direction.   [Ans: 2×10^{-8} C m]

Q.39: An electric dipole consisting of a pair of equal and opposite charges each of magnitude 5 μC has dipole moment equal to 5.0×10^{-7} Cm. Find the length of the dipole.   [Ans: 0. 1 m]

☑**Q.40:** Two charges each of 2.5×10^{-7} C but opposite in sign form a system. These charges are located at points A (0 , 0 , - 15) cm and B (0 , 0 , + 15) cm respectively. What is the total charge and electric dipole moment of the system ? [Ans: Total charge on the system = 0 ; $\vec{p}$ = 7.5×10^{-8} C m]

➤ **ELECTRIC FIELD INTENSITY ON AXIAL LINE OF ELECTRIC DIPOLE :**

Q.41: How does the electric field strength change with distance 'r' from a short dipole ?

Q.42: What is the direction of electric field intensity due to an electric dipole at a point on its axial line ?
                                                                                    HOTS

Q.43: The distance of the field point on the axis of a small dipole is doubled. By what factor will the electric field, due to the dipole change?   **HOTS**

Q.44: Derive an expression for the electric field intensity at any point along the axial line of an electric dipole.   **CBSE**

Q.45: Two point charges +3μC and - 3μC are located 20 cm apart in vacuum. Find the E.F at a point on the axis 20 cm away from the centre of the dipole.   [Ans: 2.4×10^{5} N/C]

☑**Q.46:**   Two point charges + 3 μC and - 3 μC are located 20 cm apart in air.
    (i)   Calculate the electric field at the mid – point O of the line AB joining the two charges .
    (ii)   If a negative charge of 1.5×10^{-9} C is placed at that point , find the force experienced by this charge.   [Ans: (i) 5.4×10^{6} N / C   (ii) 8.1×10^{-3} N]

➤ **ELECTRIC FIELD INTENSITY ON EQUITORIAL LINE OF ELECTRIC DIPOLE :**
1 – MARKS QUESTION

Q.47: Electric field intensity due to electric dipole at a point of distance 'r' from its centre varies as …….

Q.48: How are the electric field intensities of a short dipole on axial and equatorial lines related to each Other.

Q.49: What is the direction of electric field intensity due to an electric dipole at a point on its equatorial line ?   **HOTS**

Q.50: At what points, is the electric dipole field intensity parallel to the line joining the charge ?

Q.51: The distance of the field point, on the equatorial plane of a small electric dipole is halved. By what factor does the electric field due to the dipole change?   **HOTS**