Dielectrics

A dielectric is a substance which does not allow the flow of charges through it but permits them to exert electrostatic forces on one another.

* **Polar dielectrics or Non-Polar dielectrics**

Centre of mass of positive and negative charge not lie on the same axis.
E.g. HCl, H_2O, etc.

Centre of mass of positive and negative charge lies on the same axis.
E.g. H_2, CO_2, etc.

* **Behaviour of Polar ~~or~~ and Non-Polar dielectric in the electric field**

⇒ As we know that, in non-polar dielectrics the centre of mass of +ve charges and centre of mass of -ve charges coincides so the dipole moment is zero ~~and~~.

In the presence of external electric field the positive charges displaced in the direction of electric field and -ve charges is placed in the opposite direction of the electric field. So the induced dipole moment developed in the non-polar dielectrics in the direction of external electric field.

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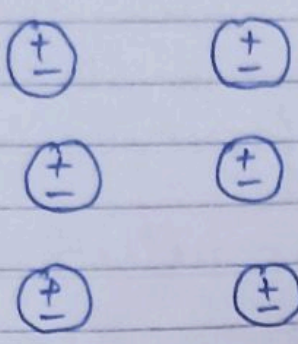
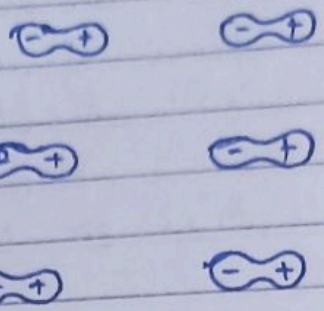
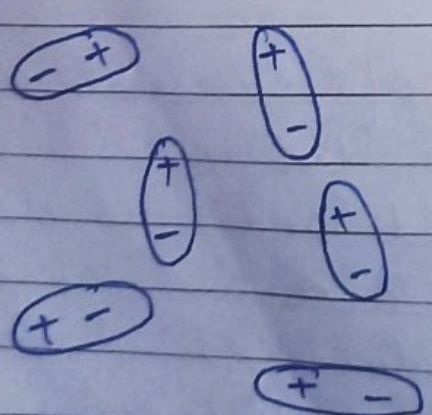
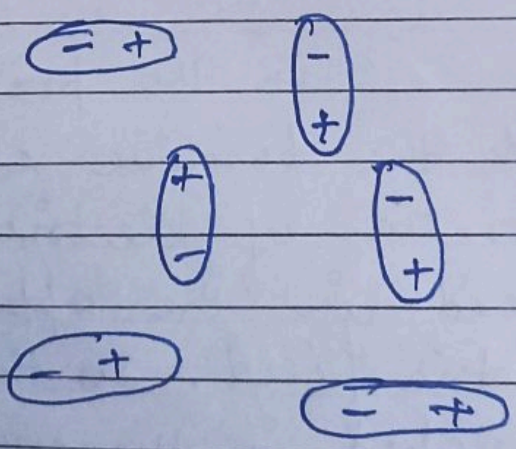
$E_0 = 0$	$E_0 \neq 0$
	

⇒ As we know that, in polar dielectrics the centre of mass of +ve and -ve charges does not coincides, so the dipole moment is permanent but due to orientation of the molecules dipole moment is zero.

In the presence of external electric field the positive charges displaced in the direction of electric field and -ve charges is placed in the opposite direction of the electric field. So the induced dipole moment of the polar dielectrics in the direction of external electric field.

$E_0 = 0$	$E_0 \neq 0$
	

Electric Polarisation ($\vec{E}$)

The polarisation is the phenomenon in which polar and non-polar dielectrics developed in net dipole moment in the presence of external electric field. Or

Dipole moment per unit volume is called Electric Polarisation.