9. An equipotential surface is that surface at every point of which, the electric potential is the same.

10. The resistivity of conductor is equal to the resistance offered by the conductor of unit length and unit cross-sectional area.

Resistance, $R = \rho\frac{\ell}{A}$ ρ = resistivity of the material.

11. Ohm's law: Temperature and other physical conditions remaining same, the electric current flowing through a conductor is directly proportional to its potential difference. i.e., $I \propto V$ or, $V = IR$ where R = resistance of the conductor.

12. Specific resistance (ρ) of a material is defined as the resistance of unit length and unit cross-sectional area of the conductor. Its S.I. unit is ohm-m.

Specific resistance, $\rho = \frac{m}{ne^2\tau}$

13. Mobility (μ) is defined as the drift velocity (V_d) per unit electric field E. i.e., $\mu = \frac{V_d}{E}$.

14. The average time difference between two successive collisions of drifting electrons inside the conductor under the influence of electric field is known as relaxation time.

15. E.m.f of a cell is defined as the maximum potential difference between the two electrodes of the cell when no current is drawn from the cell i.e., in open circuit.

16. The motion of free electrons in a conductor are continuous and random. They collide with positive metal ions and change direction during each collision. So thermal velocities are randomly distributed and average velocity is zero.

When a potential difference is applied across the ends of a conductor, electrons are drifted towards the positive terminal of the field, this velocity is called drift velocity (v_d).

Drift velocity, $v_d = -\frac{e\bar{E}\tau}{m}$

Electric flux $\phi_E = \vec{E}.\overrightarrow{ds}$

2. Electric dipole moment of an electric dipole is the product of its either charge and the length of the electric dipole. It is denoted by p.

   $p = q \times 2l$

   Its unit is coulomb-metre.

3. The dielectric constant of a medium is the ratio of force experienced by the two unit positive charges when placed at unit distance from each other in vacuum to the force experienced by the same point charges separated by same distance in medium.

4. Quantization of electric charge:– Any charge exists in discrete lumps or packets of a certain minimum charge $\pm e$, where e is the charge of an electron. According to quantization of charge, the charge on a body can be only an integral multiple of charge on the electron, i.e.,

   $q = \pm ne$ where $n = 1, 2, 3 \ldots\ldots$ and $e = 1.6 \times 10^{-19}$ C

5. Electric field is defined as a region of space around a charge or a system of charges within which other charged particles experience electrostatic forces.

   Electric field intensity is a measure of the strength of the electric field. It is defined as the electrostatic force per unit charge.

6. Electric potential energy of a system of point charges is the total amount of work done in bringing various charges to their respective positions from infinitely large mutual separations.

   $$\text{Potential energy} = \frac{kq_1q_2}{r}.$$

7. Electrostatic potential at a point in the electrostatic field is defined as the work done in moving a unit positive charge from infinity to that point against the electrostatic force along any path. It is a scalar quantity.

8. Capacitance of a capacitor is the measure of the capacity of a device of storing charge.

   $$\text{Capacitance, } C = \frac{\text{charge } Q}{\text{voltage } V}$$

   Its S.I. unit is farad (F).