C(1): If an excess charge is given to an isolated conductor the charge will move entirely over the surface.
(It is because of that fact that like charges repeal each other).

As the conductor is given charged, an internal electric field appear initially inside the conductor; But this excess charge quickly distribute itself such a way that internal electric field is zero. And, a stage of electrostatic equilibrium is found in which the net force on each charge (excess) is zero.

for a charged conductor $\vec{E}_{inside} = 0$; therefore no field lines are present inside charged conductor

C(2): for a charged conductor all the excess charges given to conductor appears on surface of conductor, and distributed over it let 'σ' C/m² is surface charge density of charged conductor.

We know that at near points just outside the conductor magnitude of field Intensity $E = \frac{\sigma}{\varepsilon_0}$ N/C.

i.e. $E \propto \sigma$ and; $\sigma \propto \frac{1}{r}$

where; r = radius of curvature of surface.

It concludes that:

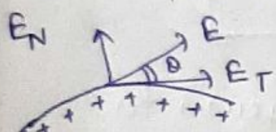
(a) If curvature of surface is uniform 'σ' is uniform i.e. |E| is constant at outside points of conductor so; flux density is uniform at near points of surface of conductor.

(b) If curvature of surface of conductor is non-uniform: then: 'σ' is non-uniform i.e. variable. We can say that |E| is different at outside points of conductor where radius of curvature of surface is small : $|E|$ is high and at those points where radius of curvature of surface is large $|E|$ is low.

for Non-uniform Curvature Surfaces: 'r' is different so: $|E|$ is different so: flux density is different. field lines are denser at those points where 'r' is less and field lines are rarer where 'r' is high.

C(3): Field lines are always perpendicular to surface of conductor i.e. Electric field just outside the surface of conductor is always perpendicular to its surface.

Reason: let the field lines are not perpendicular to surface and It makes some angle 'θ' from surface of conductor.



we can say that there would be component of electric field along the surface of conductor and this component applies electric force on the excess charge of the charged conductor and as a result of this force there would be an electric current along the surface of conductor in Electrostatic condition but this is not happen in electrostatics of charged conductor so; we conclude that there will be no component of electric field along the surface of conductor Hence; If there would be a field outside the conductor it would be always normal to surface of conductor.

C(4): If a metal Body is placed in an external electric field then. Due to the charge induced on the body surface the resultant (net) electric field Inside Conductor is zero.

we can say at any point inside Conductor

$$\vec{E}_{ext} + \vec{E}_{induced} = 0$$

at every point 'P' $\quad \vec{E}_{ext} = -\vec{E}_{induced}$

since; there is no field Inside the Conductor "No electric field lines are present inside conductor" when conductor is kept inside external electric field.