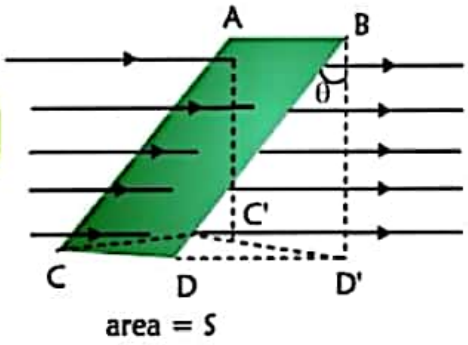
ELECTRIC FLUX

Electric Field Strength in terms of Electric Flux

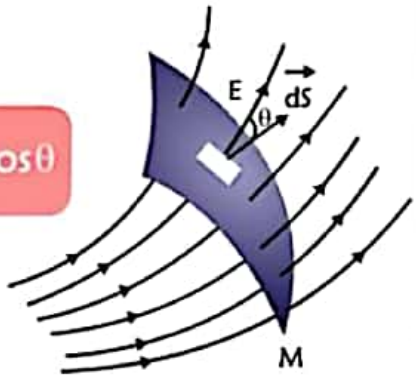
$$\phi = \vec{E}.\vec{S}$$

$$\phi = E.S.\cos\theta$$



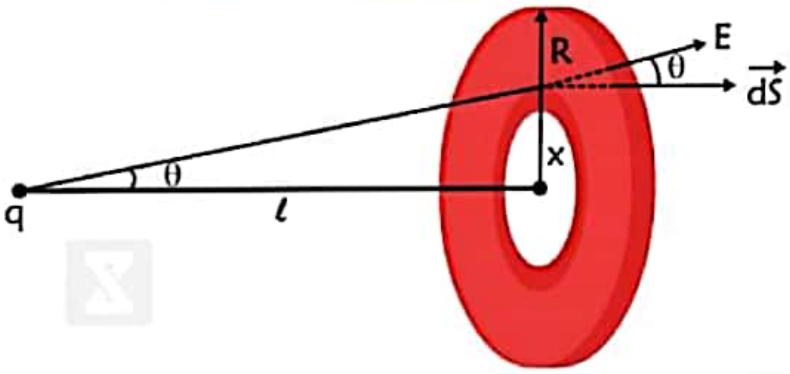
Electric Flux in Non-uniform Electric Field

$$\phi = \int d\phi = \int_M E dS \cos\theta$$



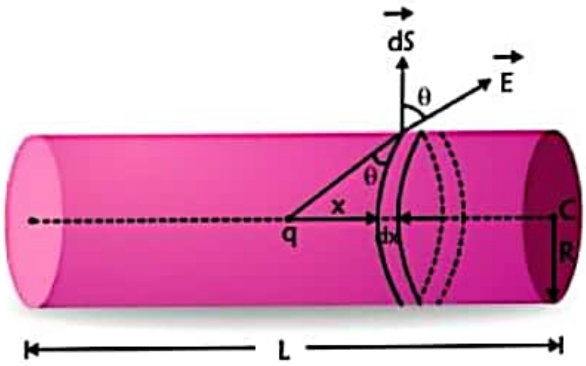
Electric Flux through a Circular Disc

$$\phi = \frac{q}{\epsilon_0}\left[1 - \frac{\ell}{\sqrt{R^2 + x^2}}\right]$$



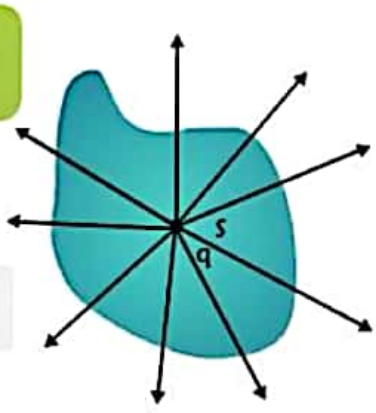
Electric Flux through the Lateral Surface of a Cylinder due to a Point Charge

$$\phi = \frac{q}{\epsilon_0} \cdot \frac{\ell}{\sqrt{R^2 + x^2}}$$



Electric Flux produced by a Point Charge

$$\phi_s = \frac{q}{\epsilon_0}$$

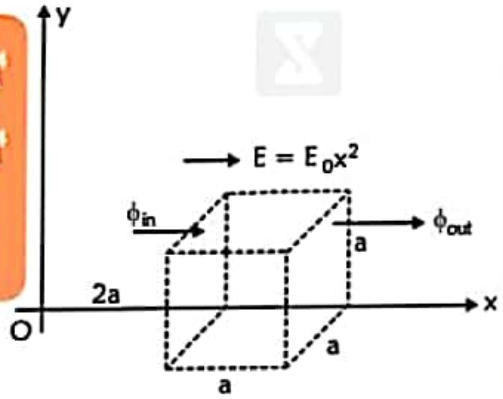


Flux Calculation in the Region of Varying Electric Field

$$\phi_{in} = E_0 (2a)^2 . a^2 = 4E_0a^4$$

$$\phi_{out} = E_0 (3a)^2 . a^2 = 9E_0a^4$$

$$\phi_{net} = 5E_0a^4$$



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