Fill in the Blank Type

Q. 13 The dimensions of electrical conductivity is ..... (1997)

Sol. The current density J is proportional to the electric field E with proportionality constant σ i.e., $J = \sigma E$.
Thus, $[\sigma] = \left[\frac{J}{E}\right] = \left[\frac{I/A}{V/d}\right] = \left[\frac{dI^2}{PA}\right] = \left[\frac{L A^2}{ML^2T^{-3}L^2}\right] = [M^{-1}L^{-3}T^3A^2]$, where $P = VI$ is power.

Ans. $[M^{-1}L^{-3}T^3A^2]$ ⊡