Fill in the Blank Type Q.13 The dimensions of electrical conductivity is (19₉₇₎ Sol. The current density J is proportional to the elec. tric field E with proportionality constant σ i.e., $J = \sigma E$. tric neid *D* when *P* = $\begin{bmatrix} I/A \\ \overline{V/d} \end{bmatrix} = \begin{bmatrix} \frac{dI^2}{PA} \end{bmatrix} = \begin{bmatrix} \frac{LA^2}{ML^2T^{-3}L^2} \end{bmatrix} =$ Thus, $[\sigma] = \begin{bmatrix} \frac{J}{E} \end{bmatrix} = \begin{bmatrix} \frac{I/A}{V/d} \end{bmatrix} = \begin{bmatrix} \frac{dI^2}{PA} \end{bmatrix} = \begin{bmatrix} \frac{LA^2}{ML^2T^{-3}L^2} \end{bmatrix} =$ $[M^{-1}L^{-3}T^{3}A^{2}]$, where P = VI is power. Ans. $[M^{-1}L^{-3}T^{3}A^{2}]$