Unit-3 Assignment-2 Electrodynamics

(Q-1) Prove Coulomb's Law from Gauss's Law

(Q-2) If electric fied $\vec{E}$ can be expressed as a gradient of a scaler potential ϕ, i.e., $\vec{E} = -\vec{\nabla}\phi$, then prove, $\boxed{\nabla^2\phi + \frac{\rho}{\epsilon_0} = 0}$ → This is called Poisson's equn

where ρ is charge density.

In case of a free medium, what will be the form of this equation. → This form is called Laplace equn.