Physics 3510, Electromagnetic Theory
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Review for Final Exam, Part 1

For each of the following physical quantities, write down the equation (or one of the equations) that *defines* the quantity, and then use that defining equation to determine the SI *units* of the quantity. (If the unit has its own name, express it in terms of more basic units.) For example, if the quantity were kinetic energy, the defining equation would be $mv^2/2$ and the SI unit would be $\mathrm{kg} \cdot \mathrm{m}^2/\mathrm{s}^2$ (or J).

1. Permittivity of empty space (ϵ_0)

2. Charge density (ρ)

3. Electric field

4. Electric potential

5. Capacitance

6. Electric dipole moment

7. Polarization

8. **D** field

9. Dielectric constant

10. Current

11. Current density (**J**)

12. Magnetic field

13. Permeability of empty space (μ_0)

14. Magnetic vector potential

15. Magnetic dipole moment

16. Magnetization

17. **H** field

18. Magnetic susceptibility

19. Conductivity

20. EMF

21. Magnetic flux

22. Inductance

23. Poynting vector