

Review for final exam

Ch 2 - transmission lines

- Reflection coefficient
- Matching networks, how to design
- How to use Smith chart
- How to find capacitance, inductance, etc. per unit length

Ch 4 - Electrostatics

- Maxwell's equations
- Gauss's law
- Electric Potential
- Relationship between E , D , ϵ_r , ϵ_0
- Electric Energy Density
- Electric Boundary Conditions (at metals, dielectric boundaries)
- Capacitance
- Image Method

Ch 5 - Magnetostatics

- Magnetic forces and torques
- Magnetic field due to currents
- Direction of forces, right-hand rule
- Ampere's law $\oint \mathbf{H} \cdot d\mathbf{l} = I$

Ch 6 - Time varying fields

- Current due to moving conductor in magnetic field
- Current due to changing magnetic field
- EMF voltage, and the electromagnetic generator
- Lenz's law, direction of current flow

Ch 7 - plane wave propagation

- Polarization - linear, circular
- Skin depth in conductors
- Resistance of good conductors

Ch 8 - Reflection and Transmission

- Snell's laws
- Oblique incidence - parallel and perpendicular polarization
- Brewster angle
- Transmissivity and Reflectivity

Ch 9 - Radiation and Antennas

- Hertzian dipole
- Radiation resistance
- Efficiency
- Directivity
- Radiation pattern
- Gain