

Final Exam Study Guide: Lectures 1-27

Electrical forces, fields, and potential

- Identify the behavior of charges in conductors, including the processes of charging by conduction (contact) and/or induction
- Determine the electric field created by charges in a 2D configuration
- Determine the work required to assemble charges
- Find the electric potential at a position in space created by multiple charges
- Determine the force exerted on one charge by multiple charges
- Connect information about electric potential to information about electric field (including equipotentials and electric field lines)

Circuits

- Solve for properties of circuits with resistors or capacitors in series and/or parallel configurations
- Use loop rules and/or junction rules to describe part of a circuit
- Use loop rules and/or junction rules to solve for an unknown quantity in a circuit
- Describe long-term and short-term behavior of RC circuits
- Identify properties of current and potential change across multiple elements of a circuit

Final Exam Study Guide: Lectures 1-27

Magnetism

- Connect the magnetic force exerted on a moving charge to the charge's circular motion
- Determine current induced using motional emf
- Determine direction of induced emf
- Relate direction of current in wires to the magnetic field that is created
- Determine force on a segment of wire

Light and Optics

- Correctly identify properties of EM waves
- Relate polarizer angles to intensity
- Determine what can be seen in a plane mirror
- Identify properties of images formed by lenses and/or spherical mirrors
- Solve the thin lens or mirror equation to determine an unknown quantity
- Determine the outcome of single slit diffraction or two-slit interference