Outline for Final Exam

Outlines for Exams 1 and 2, plus the following:

1. Current and Current density
2. Drift Velocity
3. Resistance and Resistivity
4. Ohm’s Law
5. Power in Circuits
6. Internal resistance
7. RC circuits
8. Forces due to magnetic field (on Charges and current carrying wires)
9. Torque due to magnetic field
10. Magnetic Dipole moment
11. Magnetic field due to current carrying wires, loops, solenoid, toroid
12. Ampere’s Law
13. Faraday’s Law
14. Magnetic flux
15. Lenz’s Law
16. Cramer’s rule
17. Curl:
   • notation
   • definition in terms of partial derivatives
   • geometric perspective involving rotational tendencies
   • significance of magnitude and direction
   • theorem connecting curl with conservative vector fields and path independence of line integrals
18. Stokes’ Theorem:
   • statement
   • use of
   • correspondence between orientation of curves and surfaces
   • informal perspective on why it’s true
19. Green’s Theorem
   • statement
   • use of