

Review for E&M I Final 2016

1. Final is comprehensive, total 200 points.
2. Major equations and integrals will be given
3. New material covers page 167 through 265.(Chap.4 & Chap.5)
4. For old materials, please see previous two exams.
5. The concept of bound charge, eq. 4-11 and eq. 4-12.
6. Compare eq. 4-9 and eq. 4-13.
7. Understand Example 4.2
8. The concept of electric displacement, D , eq. 4.21 and eq. 4.22
9. The concept of free charge density, ρ_f ,
10. Problem 4.15
11. Boundary conditions, eqs. 4.26, 4.28.
12. Example 4.5
13. Linear dielectrics
14. The concept of work in terms of D and E , compare eqs. 58. & 55.
15. The concept of right-hand rule, Figure 5.3.
16. The concept of Lorentz force law, eq. 5.1, eq. 5.16, eq. 5.27.
17. Example 5.3, and Biot-Savart law, Ex. 5.5, & Ex 5.6.
18. Ampere law, eq. 5.56 and eq. 5.57, Examples 5.9. 5.10.
19. Magnetic vector potential, \vec{A} eq. 5.61 and eq. 63.
20. Figure 5.48, relationships between, source, field, and potential.
21. Multiple expansion, understand equation 5.79 and 5.80.
22. Definition of magnetic dipole moment, eq. 5.86
23. Field due to a single dipole moment, eq. 5.88 or eq. 5.89.