Program for mid-session exam

Electromagnetism Phys 3080

1. Maxwell’s equations !!!
2. Relation between fields and potentials.
3. Gauge invariance.
5. Density of energy of the electromagnetic field.
6. Poynting vector.
7. The energy conservation law, its derivation from the Maxwell’s equations.
8. The Maxwell’s stress tensor.
9. The momentum conservation law.
10. Angular momentum of the electromagnetic field.
11. Maxwell’s equation in linear media, which is capable of polarization and magnetization.
12. Boundary conditions on the surface separating two different media.
13. Wave equations for the potentials.
14. Solution of the wave equations for the potentials.
15. Fields of the steady moving charge.
17. Energy accumulated in the current.