Anna University Exams May/June 2014 — Regulation 2013
Rejinpaul.com Important Questions — 2nd Semester BE/B.TECH
PH6251 Engineering Physics II

1. Explain the meaning of "density of states" and Derive an expression for the number of allowed states per unit volume of a solid
2. Deduce mathematical expressions for electrical conductivity and thermal conductivity of a conducting material and hence obtain Wiedemann-Franz law
3. Study All Problems in first Unit
4. Derive an expression for the electrical conductivity of an intrinsic semiconductor.Starting with the conductivity of charge carriers in an intrinsic semi conductor, describe how you will determine the banc gap of an intrinsic semiconductor.
5. Obtain an expression for the carrier concentration in an n —type semiconductor.
6. Derive an expression for density of holes in the VB of P type extrinsic semiconductor.
7. Explain the domain theory of ferromagnetism and also explain the hysteresis on the basis of domain theory of ferromagnetism.
8. Give the classification of magnetic materials on the basis of magnetic susceptibility and spin. Compare their properties.
9. Describe the structure, properties and applications of ferrites.
10. What are the hard and soft magnetic materials? Compare their properties. Give some examples.
11. Explain the different types of polarization mechanisms involved in a dielectric material.
12. Derive expressions for electronic and ionic Polarisabilities.
13. What is meant by local field in a dielectric and how is it calculated for a cubic structure. Deduce the clausius-Mosotti relation.
14. What are ferroelectric materials? Mention few examples and explain any four applications of ferroelectric materials, and also their properties.
15. Discuss the applications of dielectrics in capacitors and transformer core.
16. What are metallic glasses? How are they prepared? Explain their properties and applications.
17. What are shape memory alloys? Write their characteristics. List out any four applications of shape memory alloys. Mention any two advantages and two disadvantages.
18. Write short notes on bio materials and their applications.
19. Write short notes on NLO materials and their applications.