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B.E./B.Tech. (Full Time) DEGREE END SEMESTER EXAMINATIONS, NOV/DEC 2012

ELECTRICAL AND ELECTRONICS ENGINEERING BRANCH

SECOND SEMESTER

PH 9167-PHYSICS OF ELECTRICAL ELECTRONIC MATERIALS

(REGULATION 2008)

Time: 3hr

Max Mark: 100

Answer ALL Questions

Part – A (10 x 2 = 20 Marks)

1. Define electrical conductivity
2. Write a note on electron effective mass
3. What are extrinsic semiconductors? Give examples
4. What are the applications of Hall Effect?
5. Mention the four types of polarization process in dielectric materials.
6. Define Piezoelectricity
7. A super conducting tin has a critical temperature of 3.7K at zero magnetic fields and a critical field of 0.0306 Tesla at 0K. Find the critical field at 2K.
8. Differentiate soft and hard magnetic materials
9. How to account for refractive index of a material?
10. Mention applications of Phase modulators.

PART – B (5 x 16 = 80 Marks)

11. Write a short note on (i) Fresnel's Equation (4) (ii) Luminescence (4) (iii) White LEDs(4) (iv) Electro optic effect (4)
12. (a) Derive time dependent Schrodinger equation for motion of an electron and hence deduce time independent form from it.

(OR)

- (b) Derive an expression for the density of states based on that calculate the carrier concentration in metals.