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Question Paper Code: 30124

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

Second Semester

Computer Science and Engineering

01UPH204- APPLIED PHYSICS

(Common to EEE, ECE, EIE, ICE and IT branches)

(Regulation 2013)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. Briefly describe about Lorentz number.
2. Write quantum theory.
3. Compare elemental and compound semiconductors.
4. What are p-type and n-type semiconductors?
5. What is Meissner effect?
6. What do you understand by the terms critical temperature and critical field of a superconductor?
7. Define dielectric constant.
8. What is the effect of temperature on polarization?
9. What are metallic glasses? Mention any one of its applications.
10. In a ball mill, steel ball is used as grinding media than porcelain balls, why?

PART - B (5 x 16 = 80 Marks)

11. (b) (i) Derive the expression for density of states. (16)

Or

(b) Derive an expression for density of energy states in a metal and hence deduce the expression for carrier concentration in metals. (16)

12. (a) (i) Obtain an expression for carrier concentration in p-type semiconductor. (10)

(ii) Explain the variation of Fermi level with temperature and impurity concentration in p-type semiconductor. (6)

Or

(b) Explain in detail about variation of Fermi level with temperature. (16)

13. (a) (i) What are ferrites? Describe their structure with a neat diagram. (10)

(ii) Give any six applications of ferrites. (6)

Or

(b) (i) Define superconductivity. Give an account of BCS theory on superconductivity. (10)

(ii) Differentiate between type-I and type-II superconductors. (6)

14. (a) Derive an expression for electronic and ionic polarizability in dielectric materials. (16)

Or

(b) Derive an expression for local field in a dielectric material and hence deduce Claussius- Mosotti equation. (16)

15. (a) What are metallic glasses? Explain the preparation, properties and write their applications. (16)

Or

(b) Briefly explain about

(i) Chemical vapour deposition (8)

(ii) Electro deposition (8)
