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Question Paper Code: 32004

B.E. / B.Tech. DEGREE EXAMINATION, AUGUST 2021

Second Semester

Computer Science and Engineering

01UPH204- APPLIED PHYSICS

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

(Regulation 2013)

Duration: 1:45 hour

Maximum: 50 Marks

PART A - (10 x 2 = 20 Marks)

(Answer any ten of the following questions)

1. State Wiedemann - Franz law.
2. Write any two drawbacks of classical free electron theory.
3. The intrinsic carrier density is $1.5 \times 10^{16} \text{ m}^{-3}$. If the mobility of electron and hole are 0.13 and $0.05 \text{ m}^2 \text{ v}^{-1} \text{ s}^{-1}$ respectively, calculate the conductivity.
4. What is Hall Effect? Give any two uses?
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. Calculate the electronic polarizability of an isolated Se atom. The atomic radius of an atom is 0.12 nm .
9. List the applications of metallic glasses.
10. Write short note on carbon nano tubes.
11. Define the terms mean free path and mobility of charge carries.
12. Write quantum theory.

13. Compare elemental and compound semiconductors.
14. What are p-type and n-type semiconductors?
15. What is Bohr magnetron?

PART – B (3 x 10= 30 Marks)

(Answer any three of the following questions)

16. Derive an expression for electrical and thermal conductivities of a metal on the basis of classical free electron theory. (10)
17. Derive the expression for the density of electrons in the conduction band, density of holes in the valence band of intrinsic semiconductor and also derive the expression for intrinsic carrier concentration. (10)
18. Explain the hysteresis on the basis of domain theory. (10)
19. Describe the construction and working of liquid crystal displays. Mention its advantages and disadvantages. (10)
20. Describe the ball milling technique and chemical vapour deposition method for the synthesis of nanomaterials. (10)