A **Reg. No. :** | | | | | | | | | | | | |

Question Paper Code: U2P05

B.E./B.Tech. DEGREE EXAMINATION, MAY 2024

Second Semester

Computer science and Engineering

21UPH205- Physics For Information Science

(Regulations 2021)

(common to EEE,IT,CSD & AIDS)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. When the high resistivity material (Nichrome) is connected in ACcurrent CO1-U

   (a) Heat produced (b) Cool (c) No effect (d) Melt the wire

2. The low resistive materials are also generally called as materials CO1-U

   (a) Conducting (b) Non conducting

   (c) Semi conducting (d) Insulator

3. Semiconducting material has electrical conductivity between a good conductor and a CO1-U

   (a) Good insulator (b) Good dielectrics (c) Good alloys (d) None of these

4. ----- and silicon are two important elemental semiconductors. They are used in diodes and transistors CO1-U

   (a) Germanium (b) Aluminum (c) Copper (d) Dielectrics

5. How does ionic polarization occur? CO1-U

   (a) Splitting of ions (b) Passing magnetic field

   (c) Displacement of cations and anions (d) Never occurs

6. Which of the following easily adapt itself to store electrical energy? CO1-U

   (a) Passive dielectric (b) Superconductor

   (c) Active dielectric (d) Polar molecules

7. All the dielectric materials are materials CO1-U

(a) Conducting (b) Semi conducting (c) None of these (d) Insulating

8. Emission of photon is achieved from the recombination process of ------- - in diode laser CO1-U

(a)Electrons and protons (b) Electrons and Electrons

(c) Electrons and holes (d) None of these

9. What is the principle of fiber optics? CO1-U

(a) Total internal reflection (b) Internal reflection

(c)Total internal refraction (d) Internal refraction

10. What does acceptance angle depend on? CO1-U

(a) Refractive index (b) Diffraction index (c) None of these (d) Reflection

PART – B (5 x 2= 10Marks)

11. Define mean free path. CO1-U

12. What are the properties of semiconductors? CO1-U

13. What are the applications of ferrites? CO1-U

14. Differentiate LED and LCD. CO1-U

15. Define acceptance angle. CO1-U

PART – C (5 x 16= 80Marks)

16. (a) Deduce mathematical expressions for electrical conductivity and thermal conductivity of a conducting material and hence obtain Wiedemann-Franzlaw. CO1- U (16)

Or

(b) Derive an expression for density of energy states in a metal. Hence deduce the expression for carrier concentration. CO1- U (16)

17. (a) Derive an expression for concentration of holes (absence of electrons) in intrinsic semiconductors. CO4-Ana (16)

Or

(b) What is Hall effect? Show that for a p – type semi conductor the Hall coefficient R_H is given by 1/pe. CO6 -App (16)

18. (a) Describe the structure, properties and application of ferrites. CO3-App (16)

Or

(b) Derive an expression for Langevin-Debye equation. CO1-U (16)

19.	(a)	Explain the theory, construction and working of twisted nematic LCD display.	CO1-U	(16)
		Or		
	(b)	Describe the construction and working of light emitting diode.	CO5-Ana	(16)
20.	(a)	Describe the classification of optical fibers based on refractive index profile and propagation modes.	CO1-U	(16)
		Or		
	(b)	Explain fiber optical communication system with a neat block diagram.	CO1-U	(16)