A **Reg. No. :** [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]

Question Paper Code: U2P05

B.E./B.Tech. DEGREE EXAMINATION, NOV 2022

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   CO1-U
   conductor and a

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

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

   (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   CO1-U
   of ------- - in diode laser

   (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 CO1- U   (16)
         and thermal conductivity of a conducting material and hence
         obtain Wiedemann-Franzlaw.

                            Or

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

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

                            Or

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

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)

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19. (a) Explain the theory, construction and working of twisted nematic LCD display.   CO1-U   (16)

<div align="center">Or</div>

(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)

<div align="center">Or</div>

(b) Explain fiber optical communication system with a neat block diagram.   CO1-U   (16)

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