Register Number: ……..

B.E DEGREE EXAMINATIONS: MAY/JUNE 2014

(Regulation 2013)

Second Semester

ELECTRICAL AND ELECTRONICS ENGINEERING

U13PHT205: Applied Physics

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. The Minimum intensity of audible sound is 10^{-12} Watt /m^2. The intensity of a machine sound is 10^{-9} Watt/ m^2. The relative intensity of this sound in decibels is
   a) 300 b) 30
   c) 3000 d) 3
2. An open window is a perfect ----------of sound
3. Mobility of the electron is
   a) Flow of electron per unit electric field b) Reciprocal of conductivity
   c) Drift velocity per unit electric field d) Reciprocal of resistivity
4. The principle used in Magentic Levitation trains is ----------
5. In an impurity semiconductor, donor impurity atoms
   a) add electrons to the valence band b) remove electrons from the valence band
   c) add electrons to the conduction band d) add holes to the valence band
6. Exciton is----------
7. At Neel temperature
   a) susceptibility is maximum b) permeability is minimum
   c) susceptibility is minimum d) permeability is maximum
8. For given dielectric, as the temperature increases, the ionic polarizability----------
9. ----------is not thermal plasma
   a) Lightning b) Earth's Magnetosphere
   c) Strobe Lights d) The Aurora Borealis
10. CVD is an example for nanomaterials synthesis of _____ method

PART B (10 x 2 = 20 Marks)

(Not more than 40 words)

11. Define Phon.
12. If $10m^2$ of a carpet absorbs the same amount of sound energy as absorbed by $1m^2$ of open window, What will be the absorption coefficient of the carpet?
13. State Wiedemann Franz law.
14. What will happen to the transition temperature of a super conductor if the isotopic mass is varied?
15. Mention any four properties of semiconductors.
16. What is meant by Trap?
17. Define Curie's Temperature.
18. What is known as Dielectric strength?
19. What is Debye length?
20. Classify CNT based on the rolling up of graphene sheet.

PART C (5 x 14 = 70 Marks)

(Not more than 400 words)

Q.No. 21 is Compulsory

21. Describe Langevin theory for a paramagnetic material and obtain an expression for the susceptibility.

22. a) What is reverberation time? Derive Sabine's formula for reverberation time

(OR)

b) Discuss the factors affecting acoustics of building and their remedies

23. a) (i) With a neat diagram, derive an expression for the density of energy states. (10)

(ii) Calculate the drift velocity of electrons in copper wire of diameter 0.16 cm (4)

which carries a steady state current of 10A.(density of electrons= $8.46 \times 10^{28}/m^3$)

(OR)

b) (i) Differentiate type I and type II superconductors. (6)

(ii) Explain in detail any two applications of superconductor. (8)

24. a) (i) What is meant by carrier Concentration? (2)

(ii) Derive an expression for density of electrons in the conduction band of an intrinsic semiconductor. (12)

(OR)

b) (i) Explain the Various types of Colour centres (8)

(ii) Distinguish between Fluorescence and Phosphorescence (6)

25. a) (i) Explain the production of Glow discharge Plasma (8)

(ii) Discuss the application of plasma in Biomedical and textile fields. (6)

(OR)

b) (i) Describe the SolGel method to produce nano materials. (7)

(ii) Explain with neat diagram the Pulsed Laser deposition Technique for synthesizing Carbon Nano Tubes. (7)

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