KUMARAGURU
college of technology
character is life

B.E DEGREE EXAMINATIONS: DEC 2014

(Regulation 2013)

Second Semester

ELECTRICAL AND ELECTEONICS ENGINEERING

U13PHT205:Applied Physics

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

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. One tenth of the intensity level of a sound having the intensity ten times the standard intensity is defined as ----------------.

2. Sabine's formula for reverberation time is given as

    a) $T = 0.167V/A$ b) $T = 0.167VA$ c) $T = 0.167A/V$ d) $T = 0.167/AV$

3. The relation connecting current density (J), electric field (E) and electrical conductivity (σ) is given as

    a) $\sigma = JE$ b) $\sigma = E/J$ c) $\sigma = J/E$ d) $J = \sigma/E$

4. -------------- Superconductor observes perfect Meissner effect.

5. Chemically pure semiconductor without any impurity is called as------------.

6. The expression for Fermi energy of a p-type semiconductor at 0K is given as

    a) $E_F = E_c + E_v$ b) $E_F = (E_c + E_v)/2$ c) $E_F = E_a + E_v$ d) $E_F = (E_a + E_v)/2$

7. -------------- magnetic materials have induced magnetic moments.

8. The unit for dielectric strength is

    a) Volt-Meter   b) Volt/Meter   c)Volt/Frequency   d)Volt- Frequency

9. Plasma is -------------state of matter.

10. Carbon Nano Tubes are fabricated by

    a) sol-gel method   b) Lithography method   c) Ball-milling method   d) Arc method

PART B (10 x 2 = 20 Marks)

(Not more than 40 words)

11. State Weber - Fechner law.

12. The average reverberation time of a hall is 1.5 seconds and the area of the inner surface is $3340m^2$. If the volume of the hall is $12000m^3$, find the absorption coefficient.

13. What are the merits of classical free electron theory by metals?

14. The superconducting transition temperature of lead is 7.26 K. The initial field at 0K is 64×10^3 amp/m. Calculate the critical field at 5 K.

15. What is intrinsic carrier concentration?

16. Define excitons and traps.

17. What is bubble memory?

18. Define dielectric constant.

19. Give any four properties of plasma.

20. What is sol- gel method?

Answer all questions

PART C (5 X 14 = 70)

Q.No.21 is Compulsory

21. Write an essay on structure, any one fabrication method, properties and applications of carbon nano tubes.

22. a) Derive Sabine's formula for time of reverberation.

(OR)

b) Explain the factors affecting acoustics of buildings and also give their remedies.

23. a) Derive the expressions for electrical connectivity and thermal connectivity of a metal.

(OR)

b) i) Explain Type I and Type II super conductors. (10)

ii) Give short note on cryotron. (4)

24. a) Derive the expression for intrinsic carrier concentration and also explain variation of Fermi level with temperature.

(OR)

b) i) Derive the expression for number of electrons per unit volume in the conduction band of n-type extrinsic semiconductor. (7)

ii) Derive the expression for number of holes per unit volume in the valence band of p-type extrinsic semiconductor. (7)

25. a) i) Explain domain theory of ferromagnetism. (10)

ii) List out any four difference between soft and hard magnetic materials. (4)

(OR)

b) Explain the different types of polarizability and total polarization in a dielectric material.