B.E. DEGREE EXAMINATIONS: OCTOBER / NOVEMBER-2008

Second Semester

U07PH202: PHYSICS-II

CIVIL ENGINEERING

Time: Three Hours   Maximum marks: 100

PART A (20 x 1 = 20 Marks)
Answer ALL Questions:-

1. The unit for the coefficient of Thermal conductivity is

    A. Watt/Metre/Kelvin   B. Joule/Second
    C. Weber/Metre/Kelvin   D. Calories/Second

2. The ratio between thermal conductivity and thermal capacity per unit volume of material is
    A. Thermal conductivity   B. Thermal diffusivity
    C. Thermal expansivity   D. Thermal resistivity

3. The expression for rate of flow of heat $(Q/t) = (\theta_1-\theta_2) \Sigma (K_1 A_1/X_1)$ is for the

    A. Bodies in series   B. Bodies in parallel
    C. Bodies in random   D. both A and B

4. Forbes method is used to find the value of coefficient of thermal conductivity (K) of
    A. Conductors   B. Insulators   C. Ceramics   D. Gases

5. The Fermi Distribution function for an energy kT above the
    Fermi energy is
    A. 0   B. 26.9   C. 2.69   D.0.269

6. Which of the following gives Wiedemann-Franz Law?

    A.. σ =LT   B. $\dfrac{K}{\sigma}$ T =L   C. $\dfrac{K}{\sigma}$ L=T   D. $\dfrac{K}{\sigma}$ =LT

7. Isotopic effect of superconductivity is represented by the relation

    A. $T_C \alpha (1/M^{\alpha})$ B. $T_C \alpha (M^{\alpha})$ C. $T_C \alpha (2M^{\alpha})$ D. $T_C \alpha (1/2M^{\alpha})$

8. The temperature at which a normal material become a superconducting material is called
    A. Transition temperature   B. Curie temperature
    C.Wiedemann temperature   D. Onnes temperature

9. At 0K, the semiconductor acts as

    A. Superconductor   B. Good conductor
    C. Insulator   D. n-type semiconductor

10. Ge doped with Arsenic atom is

    A. n -type semiconductor   B. p -type semiconductor
    C. Superconductor   D. intrinsic semiconductor

11. Solar cell is made from

    A. Ceramic Materials   B Magnetic Materials
    C. Superconducting Materials   D .Semi conducting Materials

12. The Hall coefficient for the n-type semiconductor is

    A. Zero   B. infinity
    C. Negative   D. Positive

13. Cobalt is
    A. Dielectric   B. Diamaganet
    C. Paramagnet   D. Ferro magnet

14. Ferrites are subgroup of

    A. Ferromagnetic material   B. Diamagnetic material
    C. Ferrimagnetic material   D. Paramagnetic material

15. Material which lack permanent magnetic dipoles are called

    A. Dia Magnetism   B. Para Magnetism
    C. Ferro Magnetism   D. Anti-Ferro Magnetism

16. The unit of polarization is

    A. Farad metre^{-2} B. Coulomb / metre
    C. Coulomb / metre^{2} D. Coulomb / metre^{3}

17. Nitinol is a

    A. Glass   B. Rubber
    C. Shape memory alloys   D. Thermo electric material

18. Optical fiber wave guides are made from

    A. Si   B. SiO_2
    C. Ge   D.GaAs

19. The numerical aperture of an optical fiber which has a core refractive index 1.6 and cladding refractive index 1.5 is

    A. 0.557   B. 5.57
    C. 55.7   D. 557

20. He-Ne gas laser which has output power 3mW, emits light at a wavelength of 6328 Å, then the number of photons emitted per minute is

    A. 5.732×10^{17} B. 57.32×10^{17}
    C. 573.2×10^{17} D. 5732×10^{17}

PART B (5 X16 = 80 Marks)

21 a. Derive the expression for the Coefficient of thermal conductivity of a metal bar by Forbe's method

(OR)

b. Explain the heat conduction through compound media placed in series and in parallel mode.

22. a State and prove widemann-Franz law.

(OR)

b. Distinguish between TypeI and TypeII superconductor and also explain"SQUID"

23. a. Derive the expression for density of electron in an intrinsic semiconductor

(OR)

b. Derive the expression to find the Hall coefficient. Describe the experimental setup for the measurement of Hall coefficient.

24. a. Distinguish between Hard and Soft magnetic materials. Describe the structure of ferrites. Mention its applications.

(OR)

b. Derive the expression for internal field and deduce the Clausius- Mossotti relation

25. a What are metallic glasses? Explain their properties and its applications

(OR)

b. Explain the Slip casting and Isostatic pressing methods of manufacturing ceramics.

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