SATHYABAMA UNIVERSITY

(Established under section 3 of UGC Act, 1956)

Course & Branch: B.E/ B. Tech – Common to ALL Branches
Title of the paper: Applied Physics
Semester: I Max. Marks: 80
Sub.Code: 6C0003 Time: 3 Hours
Date: 13-05-2008 Session: AN

PART – A (10 x 2 = 20)

Answer All the Questions

1. Among ice, water and steam which has the highest conductivity? Why?
2. Define coefficient of thermal conductivity.
3. Explain the term anastigmat in optics.
4. What is chromatic aberration?
5. Define intensity level of sound give its unit.
6. A hall has volume of 1.3×10^5 m^3. It has a reverberation time of 1.4 second. What is the average absorption coefficient of the surface if the total absorbing surface is 2500 m^2?
7. Explain the neutral surface of the beam.
8. When the length of the cantilever is 50 cm, its depression is about 20 mm for a given load; calculate the depression for the same load when the length of the cantilever is 40cm.
9. Give the physical significance of wave function.
10. An electron is bound in one dimensional infinite well of width 1×10^{-10} m. Find the energy values in the ground and first excited states.

PART – B (5 x 12 = 60)

Answer All the Questions

11. Describe the forbe's method to determine the thermal conductivity of good conductors.

(or)

12. Explain the thermal conduction through compound media
    (i) Bodies in series
    (ii) Bodies in parallel

13. Enumerate the chief defects of spherical lenses. Find the condition for achromatism of two thin lenses when they are in contact.

(or)

14. Derive the condition for the longitudinal spherical aberration to be minimum in the case of a pair of co-axial lens system separated by a distance d.

15. Describe the rate of growth and rate of decay of sound in an auditorium and derive the Sabine's formula for reverberation time.

(or)

16. Define absorption coefficient. Discuss the Various factors affecting acoustics of buildings and how these can be rectified.

17. Derive an expression for the internal bending moment of a beam in terms of radius of curvature.

(or)

18. Explain the depression of a cantilever and derive the expression for young's modulus of the beam fixed horizontally at one end and loaded at the other end.

19. Derive the schroedinger time independent and time dependent wave equations.

(or)

20. (i) Explain with neat sketch the experimental verification of matter waves using Davission-Germer experiment.
    (ii) Calculate the De-Broglie wavelength of an electron accelerated by a potential difference of 150 V.