

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

Max. Marks :80

Sub. Code :6C0003

Time : 3 Hours

Date :10/05/2010

Session :AN

PART - A

(10 x 2 = 20)

Answer ALL the Questions

1. Is there any heat conduction through vacuum?
2. Mention the features of heat flow in compound media.
3. What do you understand by the power of a lens?
4. Define depth of focus.
5. Write the units for the following acoustical quantities.
(i) Intensity (ii) Intensity Level
(iii) Loudness (iv) Loudness Level
6. Define absorption coefficient of a material. Give its unit.
7. In an experiment the diameter of the rod is 1.26cm and the distance between the knife edges are 70cm. On putting a load of 900g at the mid point, the depression at the mid point is 0.025cm. Calculate the Young's modulus of the material of the rod.
8. Define neutral axis and bending moment in case of a bar bent under a load.
9. Calculate the wave length associated with a thermal neutron of energy 0.025eV.
10. Mention the properties of matter waves.

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. (a) Describe with necessary theory an experiment to determine the thermal conductivity of a bad conductor. (10)

(b) The total area of glass window pane is 0.6m^2 . Calculate how much heat is conducted per hour through the glass window pane if thickness of glass is 5mm, the temperature of inside is 20°C and of outside surface is 2°C . [thermal conductivity of glass = $1.1\text{ Wm}^{-1}\text{K}^{-1}$] (2)

13. (a) Describe with suitable diagrams the lateral and longitudinal chromatic aberrations.

(b) How will you achromatize a system of two thin lenses of same material?

(or)

14. State the five monochromatic aberrations of a lens. Explain how spherical aberration arises and state the various methods of minimizing the same.

15. (a) Distinguish between reverberation and echo. (2)

(b) Discuss the factors affecting acoustics of buildings and how these can be rectified. (10)

(or)

16. Describe the rate of growth and rate of decay of sound in an auditorium.

17. What is a cantilever? Obtain an expression for the depression produced at its free end when the weight of the beam is negligible.

(or)

18. (a) Derive an expression for the elevation of the midpoint of a beam supported symmetrically on two knife edges and loaded equally at the ends. (8)
- (b) A cantilever of length 50cm fixed at one end is depressed by 20mm at the loaded end. Calculate the depression at a distance of 40cm from the fixed end. (4)
19. Describe the Davission and Germer experiment to establish the concept of matter waves.
- (or)
20. Deduce the energy levels of an electron in an infinite deep 1 dimensional potential well and discuss its location inside that well.