Course: B.E./B.Tech.   Semester: I
Title of the paper: Applied Physics - I   Max. Mark: 80
Sub. Code: ET 103 (2002/2003/2004/2005)   Time: 3 Hours

PART – A   (10 x 2 = 20)
Answer ALL the Questions

1. Define conduction of a solid.

2. What are the differences between natural and forced convection?

3. State the principle of superposition.

4. Fringes of equal thickness are observed in a thin air wedge. The fringe spacing is 1.5mm and wavelength of light is 5800Å. Calculate the angle of wedge.

5. Define sound intensity level (SIL).

6. Define threshold of audibility and threshold of pain.

7. Derive expressions for the mass and the mean density of the earth.

8. Define stress and strain.

9. What are continuous X-rays?

10. State Moseley's law. Name few elements which were discovered using Moseley's law.

11. Describe with relevant theory and experiment to determine the thermal conductivity of a good conductor by Forbe's method. Discuss its merits and demerits.

(or)

12. What is meant by pyrometry? Describe the disappearing filament pyrometer. List out its merits and demerits.

13. Explain in detail the interference in thin films and derive the expression for the band width due to the transmitted light.

(or)

14. Explain the production and detection of plane, circularly and elliptically polarized light.

15. Define reverberation and reverberation time. Derive Sabine's formula for reverberation time by stating the assumptions and limitations.

(or)

16. Define Magnetostriction effect. Explain in detail the magnetostriction method of producing ultrasonic waves with a neat diagram.

17. Derive an expression for gravitational potential and field due to a spherical shell.

(or)

18. Explain how torsional pendulum is used to find the rigidity modulus of a given wire.

19. Explain the theory of Compton effect and show that the Compton wavelength depends upon the angle of scattering.

(or)

20. Solve Schroedinger's equation for the particle in a one dimensional box and obtain the eigen values and eigen functions.