IMPORTANT QUESTIONS

CH.1 PROPERTIES OF MATTER

1. Define: coefficient of viscosity.
2. Draw: Stress – Strain diagram with necessary notation. Explain: Elastic Limit and Upper Yield Point in detail.
3. Explain Young's Modulus, shear modulus, bulk modulus and Poisson's ratio.
4. Derive the formula for time period of a torsional pendulum.
5. Define: Ductility and Plasticity.
6. Explain Types of Elasticity In detail. Explain Factor affecting on Elasticity.
7. Derive the Expression for Depression of Cantilever.
8. Explain Hook`s Law.

CH.2 WAVES, MOTION AND ACOUSTICS

1. What is damping motion? Derive the differential equation and general solution of damped harmonic motion.
2. Define resonance in an oscillating system.
3. Differentiate Free and Forced oscillations.
4. What is Damped and Undamped vibrations? Derive the differential equation and general solution of damped harmonic motion.
5. Define :Damped Harmonic Motion.

CH.3 ULTRASONIC AND NON DESTRUCTIVE TESTING (NDT)

1. Write down various applications of ultrasonic waves.
2. Describe production of ultrasonic waves by magnetostriction method. Give its advantages and limitations.
3. What do you understand by NDT. Give names of few NDT methods.

4. Describe acoustic diffraction method to determine the speed of sound in liquid with suitable diagram.
5. Write down various applications of ultrasonic waves.
6. Define piezoelectric effect and explain in detail piezoelectric ultrasonic generator with necessary circuit diagram. Also mention its merit and demerit.
7. Define Magnetostriction effect and draw the neat and clean circuit diagram of Magnetostriction ultrasonic generator.
8. Differentiate Destructive and Non-destructive testing methods.
9. What is Ultrasound? List various methods of detecting ultrasonic waves.
10. Explain in brief SONAR and its application.
11. Illustrate various aspect associated with Acoustic of building.
12. Write down various advantage and disadvantage of NDT.

CH.4 SUPERCONDUCTIVITY

1. Explain the phenomenon of superconductivity.
2. Write down the applications of superconductors.
3. Describe BCS theory of superconductivity.
4. What is Meissner effect? Prove that superconductors are perfect diamagnetic materials.
5. List various properties of superconductor. Explain in brief any three properties out of them.
6. Define: Penetration depth in the vicinity of Superconductivity.
7. Explain Josephson`s Junction and its applications.
8. Differentiate Type – I and Type – II superconductors.

CH.5 LASERS

1. Write down the properties of LASER light.
2. Describe the construction and working principle of He-Ne LASER with suitable diagrams

3. Write down the various applications of LASER.
4. List the fundamental components of the Laser and draw the block diagram of Laser consists them.
5. Derive the relation between Einstein's coefficients with necessary assumptions.
6. Explain in detail construction and working of Ruby Laser with the help of necessary schematic and energy level diagram.
7. Define: Population Inversion.