

DEPARTMENT OF PHYSICS

QUESTION BANK

III SEM: Wave motion and Optics

1. Define longitudinal and transverse waves.
2. What are the characteristics of wave motion.
3. Derive an expression for differential form of wave equation.
4. Write the relation between particle and wave velocities.
5. Derive an expression for intensity of progressive wave.
6. Derive Laplace's correction.
7. Write brief account of ripple and gravity waves.
8. Derive an expression for superposition of two collinear oscillation having a) Equal frequencies b) different frequencies.
9. What are Lissajous figures? Explain
10. Uses of Lissajous figures.
11. What is a progressive wave.
12. Give the theory of Helmholtz resonator and explain?
13. Define Reverberation, Reverberation time and absorption coefficient of a material.
14. Obtain Sabine's reverberation formula.
15. List out the factors affecting acoustics in buildings.
16. What are the assumptions of Newton's corpuscular model.
17. Explain the characteristics of a wave.
18. Explain the wave particle duality.
19. Give the theory of Huygen wave front.
20. Obtain an expression for the wavelength of monochromatic source of light (Young's double slit experiment).
21. Explain how Newton's rings are formed and discuss how the wavelength of light is determined using this experiment.
22. Give the theory of interference due to division of amplitude by parallel and non-parallel plates.
23. Explain Maxwell's electromagnetic waves.
24. Discuss the corpuscular model of light.
25. Give the theory of quarter wave plates and half wave plates.
26. Explain optical activity with theory. Give an experimental method to measure the optical activity of a material.
27. Explain Fraunhofer diffraction at a single slit.
28. Obtain an expression for resolving power of plane transmission grating.
29. Write the comparison between zone plate and convex lens.
30. Obtain an expression for Michelson interferometer.