

B.Sc. Semester - 2 (NEP-2020) Examination**MARCH/APRIL-2025****PHY: Mechanics and Optics (Major-4)****Time: 2:00 Hours****Marks: 50****Instructions:**

1. All questions are compulsory.
 2. Figures to the right indicate marks.
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- Que-1 Answer any 2 out of 3 from following questions. (10)
- 1) What is wave motion? Derive a general wave equation in differential form.
 - 2) State the Law of transverse vibrations of strings.
 - 3) Derive Newton's formula of velocity of sound in air with Laplace's Correction.
- Que-2 Answer any 2 out of 3 from following questions. (10)
- 1) What is Interference of Light? Explain Young's experiment.
 - 2) Write types of Interference.
 - 3) Write a short note on Lloyd's single mirror.
- Que-3 Answer any 2 out of 3 from following questions. (10)
- 1) Discuss about Production of X-rays.
 - 2) List out the general properties of alpha particles.
 - 3) Explain practical application of X-rays.
- Que-4 Answer any 5 out of 9 from following questions. (10)
- 1) What do you mean by particle velocity and wave velocity?
 - 2) Write characteristics of wave motion.
 - 3) Write in short Acoustics of Buildings.
 - 4) What is Principle of Superposition.
 - 5) Define Interference in thin films.
 - 6) Write a conditions for interference of light.
 - 7) What is radioactivity? What kinds of rays are emitted?
 - 8) Write a note about Compton scattering of X-rays.
 - 9) Discuss about Bragg's Law.
- Que-5 Answer any 2 out of 3 from following questions. (10)
- 1) Describe how will you verify experimentally the laws of transverse of strings.
 - 2) Explain Fresnel's Biprism.
 - 3) Write a short note on decay constant.
