

B.Sc. Semester - 1 (NEP-2020) Examination

OCT/NOV-2025

PHY: Mechanics and Solid-State Electronics (Minor)

Time: 2:00 Hours

Marks:50

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate marks.

Que.1 Answer any two questions. (10)

- 1) Derive an equation of motion for simple harmonic motion.
- 2) Explain damped oscillations.
- 3) Explain forced oscillations.

Que.2 Answer any two questions. (10)

- 1) Explain the relation between longitudinal stress and strain.
- 2) Explain Young's modulus of a given long wire by Searle's method.
- 3) Explain the term Poisson's ratio and discuss its limiting values.

Que.3 Answer any two questions. (10)

- 1) Explain effect of temperature on semiconductors.
- 2) Explain Hole Current.
- 3) Write a note on n-type semiconductor.

Que.4 Answer any five questions. (10)

- 1) What is simple harmonic motion?
- 2) Define Amplitude and Time period in simple harmonic motion.
- 3) Explain Phase in simple harmonic motion.
- 4) Write the types of stress.
- 5) Define longitudinal strain and volumetric strain.
- 6) What is Hooke's law?
- 7) Write the properties of semiconductors.
- 8) Explain Knee Voltage.
- 9) Draw the band energy diagram for insulator, conductor and semiconductor.

Que.5 Answer any two questions. (10)

- 1) Explain simple pendulum.
- 2) Write a note on Torsional pendulum.
- 3) Explain Zener diode.
