

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

OCT/NOV-2024

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) Explain energy conservation in simple harmonic motion.
- (2) Write a note on damped oscillations.
- (3) Write a note on simple pendulum.

Que.2 Answer any two questions. (10)

- (1) Define the stress and explain types of stress.
- (2) Explain Young's modulus of a given long wire by Searle's method.
- (3) Write a note on Torsional pendulum.

Que.3 Answer any two questions. (10)

- (1) Explain classification of solids and energy bands.
- (2) Write a note on n-type semiconductor.
- (3) Explain forward and reverse biasing of pn-junction.

Que.4 Answer any five questions. (10)

- (1) Explain simple harmonic motion.
- (2) Define time period and derive its equation.
- (3) Define Frequency and Phase in simple harmonic motion.
- (4) Define strain and write only the types of strain.
- (5) Define Young's modulus and Bulk modulus.
- (6) Explain Hooke's law.
- (7) Explain Breakdown Voltage.
- (8) Explain Knee Voltage.
- (9) Explain Majority and minority carriers.

Que.5 Answer any two questions. (10)

- (1) Explain forced oscillations.
- (2) Write a note on Poisson's ratio.
- (3) Write a note on Zener diode.
