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**NA—29—2023**

**FACULTY OF SCIENCE**

**B.Sc. (Third Semester) EXAMINATION**

**NOVEMBER/DECEMBER, 2023**

**(New Pattern)**

**PHYSICS**

**Paper VI**

**(Waves and Oscillations)**

**(Friday, 8-12-2023)**

**Time : 2.00 p.m. to 4.00 p.m.**

*Time—2 Hours*

*Maximum Marks—40*

*N.B. :— All questions are compulsory.*

1. Explain in detail analytical treatment of stationary waves for closed end organ pipe. 15

*Or*

- (a) Explain differential equation of wave motion. 8
- (b) A simple harmonic wave of amplitude 8 units traverses a line of particles in the direction of the positive X-axis. At any given instant of time, for a particle at a distance of 10 cm from the origin, the displacement is +6 units, and for a particle at a distance of 25 cm from the origin, the displacement is +4 units. Calculate the wavelength. 7

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2. Derive Sabine's reverberation formula. 15

Or

(a) Derive an expression for forced vibration. 8

(b) Explain in detail undamped vibrations. 7

3. Write short notes on (any two) : 10

(a) Wave velocity and particle velocity

(b) Energy is not transferred in a stationary waves

(c) Damped vibrations

(d) Magnetostriction oscillator.

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