This question paper contains **2** printed pages]

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

P.T.O.

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.