

SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN
(AUTONOMOUS)

(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)

Chromepet, Chennai - 600 044.

B.Sc.Physics - END SEMESTER EXAMINATIONS - APRIL 2025

SEMESTER - II

22UPHCT2003 - Acoustics and thermodynamics

Total Duration : 2 Hrs.30 Mins.

Total Marks : 60

Section B

Answer any **SIX** questions ($6 \times 5 = 30$ Marks)

1. What are free, damped and forced vibrations?
2. Distinguish between intensity and loudness of sound.
3. List down the properties of ultrasonic waves.
4. Write a note on thermodynamic equilibrium.
5. State the laws of thermodynamics.
6. Differentiate between diesel and petrol engines.
7. Write a brief note on the physical significances of entropy.
8. A carnot heat engine works between 300K and 600K. If it consumes 100J in each cycle, what is the heat rejected in each cycle? What is the work done?

Section C

Answer any **THREE** questions ($3 \times 10 = 30$ Marks)

9. Arrive at the expression for Sabine's formula for reverberation of sound.
10. With necessary diagram, explain in detail the piezoelectric crystal method of producing ultrasonic waves.
11. Explain in detail how the first law of thermodynamics is applied to the adiabatic process.
12. Derive the equation for the efficiency of a carnot engine.
13. Derive all the six Maxwell's thermodynamic relations.
