

Roll.No.

22UPHCT2003

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 - NOVEMBER 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. State Fourier's theorem and illustrate its application to periodic motion.
2. Explain piezoelectric effect? How are ultrasonic waves produced by this method?
3. State the first law of thermodynamics. Apply it to an isothermal process.
4. Write short notes on petrol and diesel engines.
5. What is entropy? Write its physical significance.
6. List the applications of ultrasonics in medicine and industrial applications with examples.
7. Explain the Carnot cycle as refrigerator with proper discussion.
8. Write down any two Maxwell's thermodynamic relations and explain their importance.

Section C

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

9. Discuss the differential equation of a forced vibration and explain the condition for resonance.
10. Explain in detail the magnetostriction method of producing ultrasonic waves.
11. Derive the expression for work done in an adiabatic process using the first law of thermodynamics.
12. Describe Carnot's cycle with neat diagram and derive an expression for the efficiency of an ideal heat engine.
13. Derive the change of entropy in reversible and irreversible processes. Discuss its significance.
