B.Sc. DEGREE EXAMINATION, APRIL 2018.

I YEAR II SEMESTER

Core Major - Paper III - ACOUSTICS AND THEROMODYNAMICS

Time : 3 Hours Max. Marks :60

SECTION A – (10 × 1 = 10 marks)

(Q. No. 1-12) Answer any *TEN* questions

1. What is the condition for an oscillation to be simple harmonic?
2. Define damped vibration.
3. What are ultrasonic waves?
4. List the scientific applications of ultrasonics?
5. Define internal energy and mention its connection to thermodynamics.
6. State Kelvin statement of second law of thermodynamics.
7. What you mean by adiabatic process?
8. Find the efficiency of a Carnot engine working between steam point and ice point
9. Write any two advantages of diesel engine.
10. Write the equation for entropy from second law of thermodynamics.
11. What are reversible processes?
12. Define Fourier theorem.

SECTION B – (5 × 4 = 20 marks)

(Q. No. 13-19) Answer any *FIVE* questions

1. Derive the expression for period for simple harmonic motion.
2. Explain forced vibration with an example.
3. Describe the magnetostrition method of ultrasonic production.
4. Explain thermodynamic system and thermodynamic process.
5. Calculate the work done in isothermal process with PV diagram.
6. Describe the working of an Otto engine.
7. Calculate the change in entropy in reversible process.

SECTION C – (3 × 10 = 30 marks)

(Q. No. 20-24) Answer any *THREE* questions

1. Derive the expression for frequency of oscillation in free vibration.
2. Explain the construction and working of a piezoelectric oscillator.
3. Describe the applications of first law of thermodynamics to isothermal and adiabatic process.
4. Discuss the construction and working of petrol engine.
5. Derive any four Maxwell’s thermodynamic relations.