## B.Sc. DEGREE EXAMINATION,APRIL 2020
## I Year II Semester
## Acoustics and Thermodynamics

**Time : 3 Hours** **Max.marks :60**

**Section A** $(10 \times 1 = 10)$ Marks

Answer any **TEN** questions

1. What is simple harmonic motion?
2. State Fourier's theorem.
3. What are ultrasonic waves?
4. Give the advantages of magnetostriction method.
5. Define thermodynamic system.
6. State Zeroth law of thermodynamics.
7. Define efficiency of a Carnot engine.
8. Explain the term Heat and temperature.
9. Define entropy.
10. Write the Maxwell's thermodynamic relations.
11. Write the condition for a body executing a SHM.
12. Explain the principle of magneto striction method.

**Section B** $(5 \times 4 = 20)$ Marks

Answer any **FIVE** questions

13. Derive an expression for free vibration of a body executing SHM
14. Write any six applications of ultrasonic waves.
15. State the laws of thermodynamics.
16. Discuss the working of petrol engine.
17. What happens to change in entropy of a system which undergoes
    (i) reversible (ii) irreversible process?
18. Derive an expression for work done in Isothermal process.
19. A Carnot engine has an efficiency of 30% when the temperature of the sink is 27°C, what must be the change in temperature of the source to make its efficiency 50%?

## **Section C** $(3 \times 10 = 30)$ Marks

Answer any **THREE** questions

20. Discuss in detail the forced vibration of a body executing SHM.
21. Discuss the production of ultrasonic waves by piezo electric crystal methods.
22. Explain the application of first law of thermodynamics to isothermal and adiabatic process.
23. Derive with necessary theory the construction and working of a Diesel engine. Explain its merits over Otto engine.
24. Derive Maxwell's thermodynamic relations.

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