R-16

Faculty of Science

B.Sc (Physics) II-Year, CBCS –III Semester Backlog Examinations, January 2021

PAPER: THERMODYNAMICS

Time: 2 Hours

Max Marks: 80

I. Answer any **FOUR** of the following questions   (4x20=80 Marks)

1. Explain mean free path of a gas. Derive Maxwell's law of distribution of molecular speeds.

2. Explain the concept of entropy. Obtain expressions for change in entropy in reversible and irreversible processes.

3. Define the four thermodynamic potentials, using these potentials obtain Maxwell's thermodynamic equations.

4. What is adiabatic demagnetization? Obtain an expression for final temperature in adiabatic demagnetization.

5. Derive Planck's law of radiation. How does it explain Wein's law and Rayleigh-Jeans law?

6. What is radiation pyrometer? Describe the construction and working of a disappearing filament optical pyrometer.

7. Write some postulates of Statistical Mechanics. Explain the differences between classical statistics and quantum statistics in detail.

8. State the conditions for Fermi- Dirac statistics. Derive an expression for Fermi-Dirac distribution.

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