

NORTH GAUHATI COLLEGE
DEPARTMENT OF PHYSICS
B.SC. 3RD SEMESTER (REGULAR) CBCS
SUB: THERMAL PHYSICS & STATISTICAL MECHANICS (PHY-RC-3016)
ASSIGNMENT - I

LAST DATE OF SUBMISSION: August 10, 2021

TOTAL MARKS: 20

The figures in the brackets indicate the full marks for each question

- 1.** Define intensive and extensive properties with two examples each. [2]
- 2.** Explain the Carnot cycle with a proper diagram. [4]
- 3.** What do you mean by Macrostate and Microstate? Explain with an appropriate example. [3]
- 4.** What do you mean by thermodynamic probability? How is entropy related to thermodynamic probability? [2]
- 5.** (a) Write down the comparative statements of Maxwell-Boltzmann (MB), Bose-Einstein (BE) and Fermi-Dirac (FD) statistics.
(b) What do you mean by Boson and Fermion? Give two examples of each.
(c) State Pauli's Exclusion Principle. [5]
- 6.** Show that the Maxwell-Boltzmann energy distribution law is a limiting case of the Fermi-Dirac distribution. [4]

General instructions for submission:

- ★ Write your answers in **A4 size paper** clearly mentioning your **name, GU roll number, registration number, paper code, email address**, etc. on the **first page** of your answer sheets.
- ★ You need to make a **single PDF file** of your assignments and **upload** them on the **online portal of our college** (by clicking the 'upload' button next to the 'view' button on the assignment page).
- ★ Only if you are **unable to upload** on the website, you may send the assignment mentioning proper **course code and assignment number as subject** to the email: **ngcphysicsdept@gmail.com**