BS- 2110
STATISTICAL PHYSICS AND THERMODYNAMICS -I
SEM-III DEC-2019

10383/NH

TIME : 3 HOURS **M:MARKS :30**

NOTE: The candidate are required to attempt two question each from Section A & B Section C will be compulsory . Attempt any five from Section C.

Section A

Q1. What do you understand by equilibrium state of a dynamic system ? Explain. (5)

Q.2. Give the distribution of four particles (consider both the cases, particles being distinguishable and indistinguishable) in two compartments of equal size. (5)

Q.3. What do you mean by deviation from the state of maximum probability. Find an expression for it. (5)

Q4. Discuss the distribution of n-particles in k compartments of unequal sizes. (5)

SECTION B

Q5. Compare Maxwell Boltzmann, Bose Einstein and Fermi Dirac Statistics. (5)

Q6 Derive Bose Einstein distribution law. (5)

Q7. Discuss the experimental verification of Maxwell Boltzmann law of distribution of molecular speeds. (5)

Q8. What is Stefan's law? Derive it from Planck's law. (5)

SECTION C

Q9. Do any five (5*2=10)

(i) Define Thermodynamic probability.

(ii) What is the effect of constraints on the system?

(iii) What do you understand by Phase Space.

(iv) What do you mean by mutually exclusive events ? Give example.

(v) Give the differences between classical and quantum statistics.

(vi) What is the size of the cell in classical statistics?

(vii) What are equally likely events? Explain with example.