**B.Sc. 6th semester Sessional Examination 2021**

Subject: Physics (Major)

Paper: 6.4

Full marks: 30

**(Statistical Mechanics)**

**1.** Answer the following questions: 1x6=6

 a. What do you understand by microstate and macrostate?

 b. What is phase space?

 c. What is the meaning of an ensemble?

 d. Define entropy?

 e. What do you mean by ‘bosons’?

 f. What is degeneracy of an energy level?

**2.** Answer the following questions: 3x4=12

 a. Compare between micro-canonical, canonical and grand canonical ensemble.

 b. How do you define the most probable microstate? What is its importance in statistical

 physics?

 c. Derive most probable distribution in BE statistics.

**3.** For what kind of system Maxwell Boltzmann statistics is applicable? 1+5+6=12 Derive the Maxwell Boltzmann energy distribution function.

 $n(ϵ)=g(ϵ)e^{-α}e^{-βϵ}$

Also find the value of $α and β$ for a system of n particle in equilibrium at temperature T.