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Code No. 6777 / CBCS / NON CBCS / N

FACULTY OF SCIENCE

M.Sc. II-Semester Examination, May / June 2017

Subject: Physics & Applied Electronics
Paper- II
Statistical Mechanics

Time : 3 Hours **Max. Marks: 80**

PART – A (8x4=32 Marks)
(Short Answer Type)

1. Discuss the relation between entropy and probability
2. Discuss the postulate of aproiri probability
3. Distinguish between grand canonical and canonical partition functions
4. Explain equipartition theorem
5. Distinguish between Bosons and fermions
6. Comment on white Dwarf Stars
7. Write a note on Ising Model
8. Define fluctuations and express the relation for fluctuation in energy.

PART – B (4x12=48 Marks)
(Essay Answer Type)

9.(a) Define phase space. Discuss how phase density is conserved in phase space.

OR

(b) Explain Gibbs Paradox, obtain Sachur-Tetrode equation for an entropy of perfect gas.

10.(a) Apply MB Statistics for the deduction of Maxwell velocity distribution law for classical particles.

OR

(b) Explain the concept of partition function. Obtain an expression for vibrational partition function and calculate the specific heat for diatomic molecule.

11.(a) What are the assumptions of Bose – Einstein gas. Obtain an expression for energy of Bose – Einstein gas

OR

(b) Comment on (i) Bose – Einstein condensation (ii) Thermionic emission.

12.(a) (i) Explain phase transitions of first and second kind with examples.
(ii) Explain Brownian motion.

OR

(b) Discuss Bragg - Williams approximation and apply it to ferromagnetic systems.

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