

SARASWATI MAHILA MAHAVIDHYALAYA, PALWAL

LESSON-PLAN

Class: MSc first year

Semester: II

Subject: statistical mechanics

Session: 2021-2022

Lecture Number	Topic
1	Unit - I Phase space, ensembles, liouville theorem
2	Conservation of extension, equation of motion, equal of priori probability
3	Statistical equilibrium,
4	Microcanonical ensembles
5	Quantization of phase space,
6	Classical limit, symmetry of wave function effect of symmetry on counting
7	Various distribution using micro canonical ensemble entropy of ideal gas
8	Equilibrium conditions
9	Quasi static process
10	Entropy of an ideal gas using micro canonical ensemble
11	Gibbs paradox
12	Sackur tetrode equation
13	Probability distribution and entropy of two level system
14	Revision Test of unit - I
15	Numerical practice
16	Unit-II entropy of a system in contact with a reservoir
17	Canonical ensemble
18	Ideal gas in canonical ensemble
19	Equipartition of energy

20	Third law of thermodynamics
21	Photons, grand canonical ensemble
22	Ideal gas in grand canonical ensemble
23	Comparison of various ensemble
24	Quantum distribution using other ensemble
25	Revision of unit -II
26	Numerical revisions
27	Numerical test
28	Unit II full revision
29	Unit -III transition from classical statistical mechanics to quantum statistical mechanics
30	Indistinguishability and quantum statistics
31	Identical particles and symmetry requirements
32	Bose Einstein statistics
33	Fermi Dirac statistics,
34	Maxwell Boltzmann statistics
35	Bose Einstein condensation
36	Thermal properties of B.E. gas
37	Liquid Helium
38	Energy and pressure of F- D gas
39	Revision Test of half III Unit
40	Numerical solution
41	Numerical practice session

42	Electrons in metals
43	Thermionic Emission
44	Test of thermionic Emission
45	Saha theory of thermal Ionisation
46	Test of above topic
47	Unit -III revision Test
48	Numerical test of unit -III
49	Assignment of unit -I
50	Assignment of unit -II
51	Assignment of unit -III
52	Whole unit test
53	Unit -IV cluster expansion for a classical gas
54	Virial equation of state
55	Van der Waals gas
56	Phase transition of second kind
57	Ising model
58	Bragg Williams approximation
59	Ising model in one and two dimensions
60	Fluctuations in ensembles
61	Energy fluctuation in Quantum statistics
62	Concentration fluctuation in Quantum statistics
63	Numerical practice session

64	Numerical practice
65	Numerical test
66	One dimensional random walk
67	Brownian motion
68	Revision Test of unit -IV
69	Numerical revision Test
70	Assignment of unit -4
71	Problem solving session
72	Numerical solution session

Signature:

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