

Lesson Plan

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Name = Dr. Ashok Kumar

Session = 2021-22

Subject = Physics

Class = B.Sc 2nd Year (IVth Sem)

Week 1

(21-26)
March

Probability, some probability considerations, combinations possessing maximum probability, combination possessing minimum probability, distribution of molecules in two boxes.

Week 2

(28 March
To
02 April)

Case with weightage (general). Phase space,

Week 3

(4-9) April

microstates and macrostates, statistical fluctuations constraints

Week 4

(11-16) April

Accessible states. Thermodynamical probability.

Week 5

(18-23)
April

Postulates of Statistical Physics. Division of Phase space into cells. Condition of equilibrium between two system in thermal contact.

Week 6

and
Week 7

(25 April
To
07 May)

β -parameter. Entropy and Probability. Boltzmann's distribution law. Evaluation of A and β .

Week 8
(9-14) May Bose - Einstein statistics, Application of B.E. statistics to Planck's radiation law, B.E. gas.

Week 9
(16-21) May Fermi - Dirac statistics, M.B. Law as limiting case of B.E. Degeneracy and B.E. Condensation. F.D. gas.

Week 10
(23-28) May Electron gas in metals. Zero point energy. Specific heat of metals and its solution.

Week 11
(30 May To 04 June) Interference by Division of Amplitude: Colour of thin films, wedge shaped film, Newton's rings. Interferometers: Michelson's interferometer and its application to (I) Standardisation of a meter (II) determination of wave length.

Week 12
(6-11) June Fresnel's Diffraction: Fresnel's half period zones, Zone plate, diffraction at a straight edge, rectangular slit and circular aperture.

Week 13
(13-18) June Fraunhofer diffraction: One slit diffraction, Two slit diffraction, N-slit diffraction, Plane transmission grating spectrum, Dispersive power of a grating, Limit of resolution, Rayleigh's criterion, Resolving power of telescope and a grating.

Week 14
(20-25)
June

Polarization: Polarisation and Double refraction, Polarisation by reflection, polarisation by scattering, Malus law, Phenomenon of double refraction, Huygen's wave theory of double refraction (Normal and oblique incidence).

Week 15
(27 June
To
02 July)

Analysis of Polarised light: Nicol prism, quarter wave plate and half wave plate, production and detection of (i) Plane polarized light (ii) Circularly polarized light (iii) Elliptically polarized light, optical activity, Fresnel's theory of rotation, Specific rotation, Polarimeters (half shade and Biquartz).