

Lesson - plan

Class - B.Sc - 4th Sem (Sec D & B)

Sub - Physical Chemistry

Name of Lecturer - Dr. Hangu Kumari

Week - 1

21st March -

26th March

Thermodynamics - III

Second law of thermodynamics, need for 2nd law, different statements of the law, Carnot cycle and its efficiency, ϵ

Week - 2

28th March -

2nd April

Carnot cycle and Carnot theorem.

Week - 3

4th April -

9th April

Thermodynamics Scale of temperature

Concept of entropy

Week - 4

11th April -

16th April

Entropy as a state function,
entropy as a function of V & T
entropy as a function of P & T

Week - 5

18th April -

23rd April

Entropy change in physical chem
Entropy as a criteria of spontaneity and equilibrium.

Week - 6

25th April -

30th April

Entropy change in ideal gases & mixing of gases

Third Law of thermodynamics: Nernst heat theorem, Statement of concept of $R \cdot \epsilon$
Evaluation of absolute entropy from heat capacity data. Gibbs and Helmholtz functions and A as thermodynamic quantities.

Week - 7

2nd May -

7th May

 G & ΔG criteria for thermodynamic equilibrium

9th May - 14th May

- 16 May to 21 May → Electrolytic and Galvanic cell
- 23 May to 28 May → Reversible and Irreversible cell
- 30 May - 4 June → EMF of cell & measurement
- 6 June - 11 June → Activity & activity coefficients.
- 13 June - 18 June → Types of reversible electrodes.
Electrode reactions
- 20 June - 25 June → Nernst equations, derivation of cell EMF and single electrode potential, Electrochemical series
- 27 June - 2 July → Concentration cells with and without transference, liquid-junction potential
- 4 July - 9 July → Hydrogen electrode, potentiometric titration, quinhydrone electrode

class - B.Sc 4th sem (Sec. D) Lesson Plan

Subject - Inorganic chemistry

Name of Lecturer - Dr. Manju Kumari

Week-1 21st March - 26th March	Chemistry of f-block elements Lanthanides: Electronic structure, oxidation states,
Week-2 28th March - 2nd April	magnetic properties, complex formation Colour, Ionic radii
Week-3 4th April - 9th April	Lanthanide contraction, occurrence
Week-4 11th April - 16th April	Separation of Lanthanides.
Week-5 18th April - 23rd April	Lanthanide Compounds
Week-6 25th April - 30th April	Actinides. General characteristics of actinides
Week-7 2nd May - 7th May	Chemistry of separation of Np, P and Am from Uranium.
Week-8 9th May - 14th May	transuranic elements

- 16 May to 21 May → Comparison of properties of Lanthanides & actinides
- 23 May to 28 May → Chemistry of analysis of various groups of basic and acidic radicals
- 30 May to 4 June → Chemistry of identification of acid radicals.
- 6 June to 11 June → Chemistry of interference of acid radicals.
- 13 June to 18 June → Common ion effect, Solubility product
- 20 June to 25 June → Theory of precipitation
- 27 June to 2 July → Post precipitation
- 4th July to 10th July → Purification of precipitates

Lesson plan

Sec EL B.Sc-1st
2nd Sem

Subject :- Inorganic Chemistry (Monday, Tuesday)

Name of Lecturer - Dr. Manju Kumari

Unit-1	
Week-1 26th March - 26th March	Hydrogen bonding & Van der Waals forces
Week-2 28th March - 29th April	Metallic bond
Week-3 4th April - 9th April	Band theory of Metallic bond
Week-4 11th April - 16th April	Semiconductors
Week-5 18th April - 23rd April	S-block elements Diagonal relationships
Week-6 25th April - 30th April	Salient features of hydrides.
Week-7 2nd May to 7th May	Solvation and complexation tendency including their function in biosystems
Week-8 9th May - 14th May	Chemistry of Noble gases

16 May to 21 May → Structure & bonding of fluorides, oxides and oxyfluorides of Xenon,

23 May to 28 May → P-block elements, study of properties

30 May - 4 June → Boron family

6 June - 11 June → Carbon family

13 June - 18 June → Nitrogen Family

20 June - 25 June → Oxygen family

27 June - 2 July → Halogen family

4th July - 9th July → Revision

Subject - Organic Chemistry

Name of Lecturer - Dr. Mangy Kumari

<p>Week - 1 21st March - 26th March</p>	<p>Heterocyclic compounds - I Introduction, Molecular orbital picture, and aromatic characteristics of pyrrole, Furan, thiophene and pyridine.</p>
<p>Week - 2 28th March - 2nd April</p>	<p>Methods of synthesis and chemical reaction with particular emphasis on the mechanism of electrophilic substitution</p>
<p>Week - 3 4th April - 9th April</p>	<p>Mechanism of nucleophilic substitution rxn in pyridine derivatives. Comparison of basicity of pyridine, piperidine and pyrrol</p>
<p>Week - 4 11th April - 16th April</p>	<p>Heterocyclic Compounds - II, Introduction to condensed five & six membered heterocycles. Preparation and reactions of Indole, Fisher Indole synthesis, Skraup synthesis</p>
<p>Week - 5 18th April - 23rd April</p>	<p>Bischler - Napieralski synthesis, Mechanism of electrophilic substitution reactions of quinoline and Isoquinoline. Organosulphur Compound. Methods of synthesis & chemical reaction,</p>
<p>Week - 6 25th April - 30th April</p>	<p>organic synthesis of α-enolates Acidity of α-hydrogens, alkylation of diethyl malonate and ethyl acetoacetate. Claisen condensation Synthetic polymers.</p>
<p>Week - 7 2nd May - 7th May</p>	<p>Amino acids, peptides and proteins Classification of amino acids, preparation of amino acids, Acid-base behaviour, Isoelectric point and electrophoresis, Structure of peptides & pro-</p>
<p>Week - 8 9th May - 14th May</p>	<p>Classification of proteins, peptide structure determination, end group analysis, selective hydrolysis of peptides. Classical peptide synthesis,</p>

Inorganic chemistry

- 16 May to 21 May \Rightarrow Organometallic Chemistry
Introduction & classification of organometallic compounds, Preparation.
- 20 May to 25 May \Rightarrow Acid & bases; concepts of acids & bases
Concept of Hard and soft acids and bases.
- 30 May to 4 June \Rightarrow Bioinorganic chemistry, Essential & trace elements in biological processes, Haemoglobin & Myoglobin.
- 6 June to 11 June \Rightarrow Silicones & Phosphazenes
- Physical chemistry
- 13 June to 18 June \Rightarrow Electronic spectrum
- 20 June to 25 June \Rightarrow Photochemistry
- 27 June to 2 July \Rightarrow Solutions: Dilute solutions & colligative properties
- 4 July to 9th July \Rightarrow Phase equilibrium