Name – Pradhuman Singh Lesson plan – 2021 – 2022

LAXMI

Experiment No. Physical chemistry Even semester 2nd semester Page No.

1 – 10 May

Kinetics – Rate of Reaction, rate of equation, factors influencing the rate of a reaction – conc., Temp., pressure, Solvent, light catalyst. order of a Rx^n. integrated rate expression for zero-order, first order second order and third order reaction. Half life period of reaction. methods of determination of order of Rx^n.

11 – 20 May Effect of temp. on the rate of Reaction – Arrhenius equation. Theories of reaction rate – simple collision theory for unimolecular and biomolecular collision Transition state theory.

21 – 25 May Electrolytic conduction, factors affecting ectrolytic conduction, specific conductance, Molar conductance, equivalent conductance. and relation among them. their variation with conc. Arrhenius theory of ionization. ostwald's Dilution law, Debye-Huckel onsager equation for strong electrolytes. Transport number. Definition and Determination by Hittorf's method.

26 – 31 May Kohlarausch's law, calculation of molar ionic conductance and effect of viscosity, temp. and pressure onit. Application of kohlarausch's law in calculation of conductance of weak ectrolytes at infinite dilution. Application of conductivity measurements! – Determination of degree of dissociation, determination of K_a of acids. Definition of pH and pK_a, Buffer solution, Henderson – Hazel equation, Buffer mechanism of buffer action.

Lesson Plan

Class- B.Sc 4th Sem ( )

Subject- Inorganic chemistry

Name of Lecturer- Pradhuman Singh

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 format Colour, Ionic radii
Week-3 4th April- 9th April	Lanthanide contraction, occure
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 characterstics of actinides
Week-7 2nd May- 7th May	Chemistry of sepalation 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 radi

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 9th July → Purification of precipitates

Lesson - plan

Class - B.Sc - 4th Sem ( )
Sub. - Physical chemistry
Name of Lecturer - : Pradhuman Singh

week-1 21st March - 26th March	Thermodynamics - III Second law of thermodynamics, need for t law, different statements of the law, Carnot cycle and its efficiency, &
Week-2 28 th March - 2nd April	Carnot cycle and Carnot theorem.
Week-3 4th April - 9th April	Thermodynamics Scale of tempera Concept of entropy
week-4 11 th April - 16 th April	Entropy as a state function, entropy as a function of V & T entropy as a function of P & T
week-5 18 th April - 23rd April	Entropy change in physical ch Entropy as a criteria of spontane and equilibrium.
week-6 25 th April - 30 th April	Entropy change in ideal gases & mixing of gases Third Law of thermodynamics : Nerns heat theorem, Statement of Concept of R
week-7 2nd May - 7th May	Evaluation of absolute entropy from h Capacity data. Gibbs and Helmholtz fun G and A as thermodynamic quantit
week-8 9th May - 14th	A & G Criteria for thermodynamic equil

16 May to 21 May → Electrolytic and Galvanic cel

23 May to 28 May → Reversible and Irreversible ce

30 May-4 June → EMF of cell & Measuren

6 June-11 June → Activity & activity coefficients.

13 June - 18 June → Types of reversible electrodes. Electrode reactions

20 June - 25 June → Nernst equations, derivatio cell E.M.F and Single electrod potensial, Electrochemical se

27 June - 2 July → Concentration cells with and without transference, Liquid- Junction potensial

4 July - 9th July → Hydrogen electrode, poten metric titration, Quinhyd electrode

Lesson plan

(B.Sc-1st 2nd Sem)

Subject :- Inorganic chemistry ([redacted])

Name of Lecturer - pradhuman singh.

	Unit-1
Week-1 21st March - 26th March	Hydrogen bonding & Vander Waals forces
Week-2 28th March - 2nd 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 - 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 properti

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