

SESSION (2021 – 2022)

THE SOLID STATE

CLASS- XII CHEMISTRY

LESSON PLAN

Month-APRIL

1. Objectives- After studying this chapter, students will be able to

- * know general characteristics of solids
- * distinguish between amorphous and crystalline solids
- * classify solids on the basis of binding forces
- * define crystal lattice and unit cell
- * explain the packing of particles

2. Previous knowledge testing-

Students should have basic knowledge of periodic trends and geometry of elements

- * they should have knowledge of basic atomic properties and its effects.

3. Vocabulary / important spellings

- * Amorphous ,crystalline,voids, lattice , packing efficiency, imperfections,electrical and magnetic properties,unit cell etc.

4. Innovative methods / resources

- * daily practice problems,mcq, peer assessment, group discussions,
- * text book, NCERT, previous year questions,reference book
- * video based on The solid state would be shown to the students

<https://www.youtube.com/watch?v=RcG9e2Bg3eE>

[eE](#)

<https://www.youtube.com/watch?v=KZDUJuIaAWw>

5. Procedure-

- * The students would be shown a ppt and will be explained crystalline and amorphous solids.
- * they would be told about classification of crystalline solids on the basis of binding forces.
- * students will be explained about crystal lattice and unit cell.
- * different types of close packing and packing efficiency would be discussed.

6. Student participation-

- * Students will do questions of exercise in their notebooks.
- * they will know different types of voids.
- * students will correlate the density, edge length and radius.
- * they will be able to explain the imperfections in solids and their effect on properties

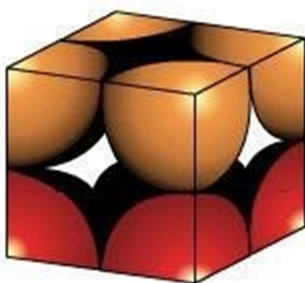
7. Recapitulation/ Assessment

- * The students would recapitulate the electrical and magnetic properties of solids and their structure.
- * They will solve conceptual questions and get their doubts cleared.
- * Students would be assessed according to the class tests which would be held from time to time.

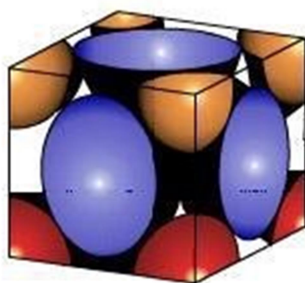
1. Learning outcomes-

Students will know and understand

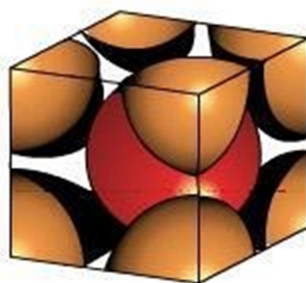
- * general characteristics of solids
- * correlate the density of a substance with its unit cell properties
- * explain close packing of particles



(a) Simple cubic



(b) Face centred cubic



(c) Body centred cubic

Three dimensional view showing the number of atoms per unit cell

2. Integration with other domains

- * While making unit cell diagrams , students improve art work.
- * Students sharpen their mathematical skills while calculating density of crystals.

10. Co- scholastic activities

- * Students use the knowledge given in the class and create projects and models and perform research to give innovative solutions to the problem studied.
- * they develop effective communication skills and learn to put across their views.
- * group discussion helps to develop interpersonal skills ,respecting and valuing views of others.

CHAPTER- SOLUTIONS

Month: APRIL ,MAY

- **Objectives:** After studying this chapter, students will be able:
 - To describe the formation of different types of solutions
 - Express concentration of solution in different units
 - State and explain Henry's law and Renault's law.
 - Distinguish between ideal and non ideal solution.
 - Explain deviation of real solutions from Raoult's law.
- **Previous knowledge testing:** Students would be asked about following methods of finding concentration of solution (i) Molarity (ii) molality (iii) mole fraction (iv) ppm (v) percentage method.
- **Vocabulary/Important spellings:** Osmosis, diffusion, boiling point, vapor pressure, saturated and unsaturated solutions, Van't Hoff factor.

- **Innovative methods:** https://www.youtube.com/watch?reload=9&v=1VEICP7_GFI, books.
- **Procedure:** Student would be taught about:
 - Concentration and methods to express this by molarity, molality, mass percentage, volume percentage, ppm, mole fraction.
 - Colligative properties such as relative lowering of vapor pressure, elevation in boiling point, depression in freezing point, osmotic pressure
 - Numerical regarding these properties
- **Student's participation:** Student would be asked about:
 - Solubility, factors affecting it
 - Vapor pressure
 - Osmosis examples
 - Reverse osmosis
 - Use of this in water filters
- **Recapitulation/Assignment:** from the above topics, following points would be clear to the students
 - Various properties of the solution
 - Application of Henry's Law and Raoult's law
 - Colligative properties
 - NCERT back exercise would be given as assignment.
- **Integration with other domain:** calculation for the numerical of this chapter can be correlated with mathematics.
- **Learning outcomes:** Students will be able to know
 - Types of solution
 - Expressing concentration of solutions
 - Solubility
 - Vapor pressure of liquid solutions
 - Ideal and non ideal solutions • Colligative properties
- Determination of molar mass
- **Resources:** NCERT book, Pradeep's publications
- **Co scholastic activities:** students will be shown virtual lab activities related to the topics done in this chapter. It will help in enhancing learning process of students. This will bring social skills, intellectual skills and moral values among students. This ensures that students get to learn effectively.

CLASS - XII

ELECTROCHEMISTRY

MONTH: MAY

Objective: After studying this chapter student will be able to

- Describe an electrochemical cell and differentiate between galvanic and electrolytic cell
- Apply Nernst equation to calculate EMF of cell
- Relation between standard potential and Gibb's free energy
- Method to measure the conductivity and molar conductivity and their relation with concentration

Previous knowledge testing: Student would be asked about electrochemical cell, functions of salt bridge.

Vocabulary: Electrolytic cell, conductivity, Kohlrausch law

Innovative method/ resources: NCERT Book, reference book and lecture method,

<https://www.youtube.com/watch?v=paRg8Q9Y1t8> **Procedure:** Student would be

told about:

- Electrochemical cells
- Galvanic cells
- Nernst equation
- Conductance of electrolytic solution
- Electrolysis

Student's participation: Students will be able to recall:

- Electrochemical cell
- Relation between resistivity, conductivity and cell constant
- Methods to measure the conductivity

- Quantitative concepts of electrolysis

Recapitulation/ assignment: Student will recapitulate

- Differences between electronic and ionic conductivity
- NCERT back exercise would be given as assignment.

Integration with other domains: During the study of the chapter, students have to do calculation for numerical which can be correlated with mathematics

Learning outcome: after learning this chapter student will be able to:

- Tell about electrochemical cell
- Justify the variation of conductivity and molar conductivity with change in concentration
- Define resistivity, conductivity, Nernst equation

Co scholastic activities: Students will be shown virtual lab activities related to the topics done in this chapter. It will help in enhancing learning process of students. This will bring social skills, intellectual skills and moral values among students. This ensures that students get to learn effectively.

CLASS- XII

LESSON- PLAN

Chemical Kinetics

Month- JULY

OBJECTIVES-

The objective to study this chapter is that chemical kinetics is the branch of chemistry which deals with the rates of chemical reactions and the factors which influence the mechanisms by which reaction proceeds.

PREVIOUS KNOWLEDGE TESTING-

- Students are expected to know that feasibility of a reaction under the given experimental conditions can be predicted on the basis of decrease in Gibbs free energy
- Knowledge of thermodynamics is essential to predict the extent to which the reaction proceeds.

VOCABULARY /IMPORTANT SPELLINGS

- Equilibrium constant, order, molecularity of a reaction, Arrhenius equation, pseudo molecular reactions, threshold energy, activation energy.

INNOVATIVE METHODS/RESOURCES-

- Smart board, Green board, study of graphs, lecture method, demonstration method, NCERT book, reference book
- Video based on chemical kinetics would be shown to students.

<https://www.youtube.com/watch?v=602063c-qzU>

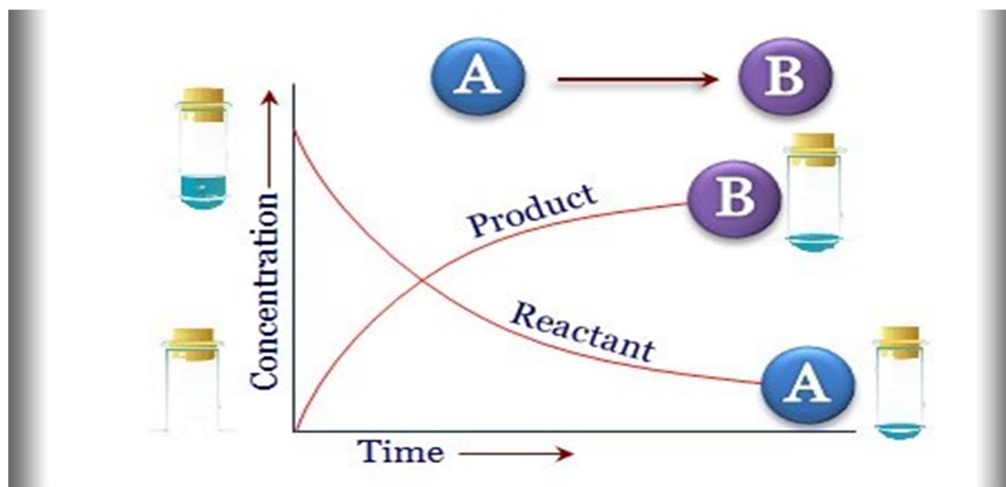
PROCEDURE-

- Students would be told about
- rate of reaction
- For a reaction
- $aA + bB = cC + dD$
- $\text{Rate} = -1/a \, d[A]/dt = -1/b \, d[B]/dt = 1/c \, d[C]/dt = 1/d \, d[D]/dt$
- dependence of rate of reaction on concentration for a reaction.

- law of mass action, $\text{rate} = k[A]^a [B]^b$
- rate law expression, $\text{rate} = k[A]^a [B]^b$
- order of a reaction, $\text{order} = a + b$
- units of k , integrated rate equation, half-life period, ○ Arrhenius equation.

STUDENT PARTICIPATION-

- Students would be able to calculate rate of a reaction.
- they will be able to calculate order of reaction.
- they will solve numerical problems based on rate of reaction.
- they will be able to calculate half-life period of a reaction.
- they will know about the role of a catalyst in a reaction.



STUDENT RECAPITULATION/ASSIGNMENT-

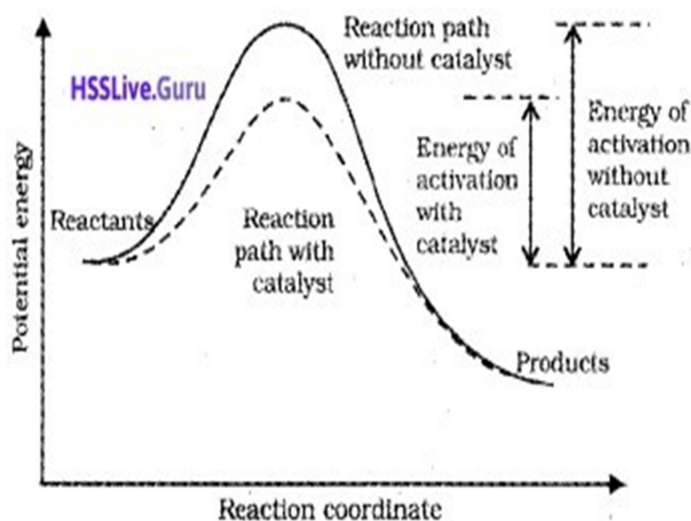
- Students would be able to calculate activation energy using Arrhenius equation.
- they can use integrated rate equation for solving numerical problems.
- they can plot various graphs of rate versus concentration

INTEGRATION WITH OTHER DOMAINS

- Chemical kinetics can be integrated with other domains such as mathematics as many numerical problems are to be calculated. It can be integrated with geometrical designing as many graphs are made.

LEARNING OUTCOMES-

- After studying this chapter, students will learn that
- chemical kinetics tells us about rate of reaction
- order and molecularity are characteristics of a reaction.
- activation energy of a reaction can be calculated by Arrhenius equation
- rate, order, half-life period of a reaction can be calculated. ○ catalyst lowers the activation energy of a reaction ○ catalyst works according to adsorption theory.



CO-SCHOLISTIC ACTIVITIES-

- Students will prepare graph on first order and zero order reactions and will discuss with each other.
- Students would be able to differentiate between slow and fast reactions and would be able to calculate the rate of reaction.
- They would know about half life period of a reaction and they would learn about radio carbon dating to estimate the age of fossils.

Chapter-THE P-BLOCK ELEMENTS

Month- JULY

OBJ ECTIVE:

Students will be able to understand

- ☐ General trends in the chemistry of elements of group 15,16, 17 and 18.
- ☐ Learn the preparation, properties and uses of dioxygen and ozone and chemistry of some simple oxides.
- ☐ The preparation of some industrially important compounds such as ammonia, nitric acid, sulphuric acid etc.

PREVIOUS KNOWLEDGE:

Students would be asked about the terms like ionization enthalpy, electron gain enthalpy, inert pair effect.

Students should be knowing about atomic properties and trends in periodic properties.

VOCABULARY:

Electron gain enthalpy, polonium, radioactive, selenium, tellurium, anomalous, rhombic Sulphur.

Allotropy, inert pair effect, dissociation enthalpy ,ostwald process, haber process,

EXPLANATION WITH INNOVATIVE METHODS:

- ☐ Smart class
- ☐ NCERT book

NCERT exemplar

Videos explaining the chapter would be shown

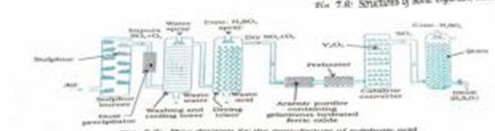
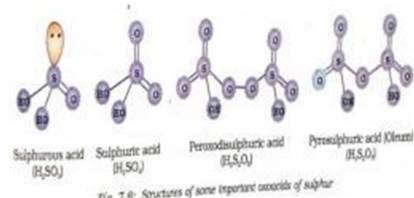
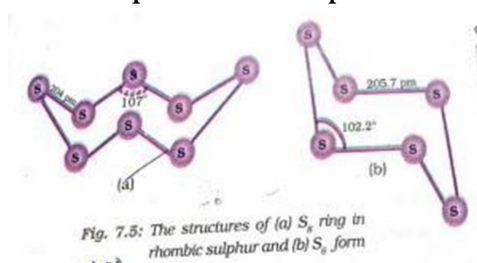
<https://www.youtube.com/watch?v=kNFXJxX72uY&t=57s>

<https://www.youtube.com/watch?v=Xvt11injjIA&t=96s>

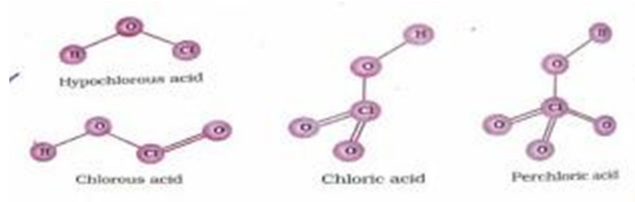
PROCEDURE:

Students will be explained

- ☐ The preparation, properties and uses of dioxygen and chemistry of some simple oxides.
- ☐ Know allotropic forms of Sulphur, chemistry of its important compounds and the structure of its oxides.



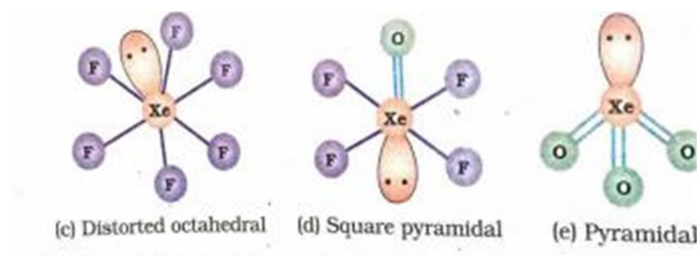
- ☐ Describe the preparation, properties and uses of chlorine and hydrochloric acid.



- Know the chemistry of interhalogens and structure of oxo acids of halogens.

Type	Formula	Physical state at room temp.	Structure
XX ₂	ClF	colourless gas	—
	BrF	pale brown gas	—
	Br ₂	detected spectroscopically	—
	BrClF	gas	—
	ICl	rusty red solid (dimer)	—
XX ₃	Br ₂	brown red solid (dimer)	—
	IBr	black solid	—
	ClF ₃	colourless gas	Best T-shaped
	BrF ₃	yellow green liquid	Best T-shaped
	IF ₃	yellow powder	Best T-shaped (75)
XX ₄	ICl ₄	orange solid	Best T-shaped (75)
	BrF ₄	colourless gas (best)	Square
	BrF ₅	solid below 77 K	pyramidal
	BrF ₃	colourless liquid	Square
	ClF ₄	colourless liquid	pyramidal
XX ₆	BrF ₆	colourless gas	Pentagonal bipyramidal
	IF ₇	colourless gas	Pentagonal bipyramidal

- Enumerate the uses of noble gases.



STUDENT PARTICIPATION:

Students would be able to tell:

- The structure of oxoacids of Sulphur.
- Structure of oxoacids of halogens.

- ☐ Properties of preparation of dioxygen, chlorine, interhalogens.

RECAPTATION/ ASSIGNMENT:

Students would be able to explain.

- ☐ Importance of these elements and their compounds in our everyday life.
- ☐ The preparation, properties and uses of dioxygen, Sulphur, chlorine and hydrochloric acid and oxoacids of halogens.
- ☐ NCERT intext and back exercises will be given as assignment.

INTEGRATION WITH OTHER DOMAINS:

This chapter is related with following domains:

- ☐ English language.
- ☐
- ☐ Art (draw structure of oxides of Sulphur, chlorine, interhalogen compounds) Math (write the balanced chemical equation.)

LEARNING OUTCOMES:

Students would be able to explain:

- ☐ The importance of these elements and their compounds in our day to day life.
- ☐
- ☐ Give answers for all the reasoning questions related to their properties.

Draw the structures of oxoacids of Sulphur, chlorine and interhalogens structure and compounds of noble gases.

CO-SHOLASTIC ACTIVITIES:

Students must draw the structures of a:

- ☐ Allotropes of Sulphur.
- ☐ Oxoacids of Sulphur.
- ☐ Oxoacids of chlorine.

☐

☐

- ☐ Structure of XeF_2 , XeF_4 , XeOF_4 , with the help of stick and ball model.

Students develop scientific attitude how to use the techniques.

Students learn team work.

ASSESSMENT:



☐ MCQ tests will be taken

Class tests will be taken. ○ **Group**

discussions would be carried out.

CLASS - XII

HALOALKANES AND HALOARENES

Month: AUGUST

Objective: After studying this chapter student will be able to

- Name haloalkanes and haloarenes
- Describe the reaction involved in their preparation
- Correlate the structures of haloalkanes and haloarenes with various types of reaction
- Stereochemistry
- Application of organ metallic compounds

Previous knowledge testing: Student would be asked about halogens, reactivity series, Wurtz reaction, nomenclature of simple compounds.

Vocabulary: allylic halides, vinyl halide, benzylic halide, nucleophilic substitution, geminal and vicinal dihalides.

Innovative method/ resources: NCERT Book, reference book and lecture method,

<https://www.youtube.com/watch?v=ztt0teVJtIY> **Procedure:** Student would be told about:

- Classification of haloalkanes and haloarenes
- Nomenclature
- Nature of C-X bond
- Methods of preparation
- Physical properties, chemical reaction

Student's participation: Students will be able to recall:

- Nucleophilic substitution
- SN1, SN2 mechanisms
- Elimination reaction
- Chiral and achiral carbon atom

Recapitulation/ assignment: Student will recapitulate

- the reactivity series according to SN1 and SN2 mechanism
- Properties of haloalkanes and haloarenes
- Elimination reactions
- NCERT back exercise would be given as assignment.

Integration with other domains: During the study of the chapter, students have to make aromatic structures this could be integrated with geometrical pattern design.

Hence it is a mathematical concept of comparison.

Learning outcome: After learning this chapter student will be able to:

- Compare the reactivities of two compounds
- Know the methods of preparation, physical and chemical properties of haloalkanes and haloarenes.

Co scholastic activities: Students will be shown virtual lab activities related to the topics done in this chapter. It will help in enhancing learning process of students.

This will bring social skills, intellectual skills and moral values among students. This ensures that students get to learn effectively.

CLASS - XII

ALCOHOL, PHENOL, ETHERS

Month: AUGUST

Objective: After studying this chapter student will be able to

- Name alcohols, phenols and ethers
- Describe the reaction involved in their preparation
- Correlate the physical properties of alcohols, phenols and ethers with their structure
- Discuss chemical reactions of three classes of compounds on the basis of their functional group.

Previous knowledge testing: Student would be asked about nomenclature of alcohols, phenols and ethers, their properties.

Vocabulary: allylic alcohol, vinyl alcohol, benzylic alcohol, alkoxy alkane, phenol.

Innovative method/ resources: NCERT Book, reference book and lecture method,

<https://www.youtube.com/watch?v=qbYXVztddJs> **Procedure:** Student would be told about:

- Classification of alcohols, phenols and ethers
- Nomenclature
- Structure of functional groups
- Methods of preparation
- Physical properties, chemical reaction
- Some commercially important alcohols

Student's participation: Students will be able to recall:

- Some name reactions of alcohol, phenol and ethers
- Mechanism of dehydration, esterification of alcohols
- Electrophillic substitution reactions

Recapitulation/ assignment: Student will recapitulate

- The various mechanisms
- Properties of alcohol, phenol and ethers
- Electrophillic substitution reactions
- Some important alcohols
- NCERT back exercise would be given as assignment.

Integration with other domains: During the study of the chapter, students have to make aromatic structure this could be integrated with geometrical pattern design.

Hence it is related with mathematical concept of comparison.

Learning outcome: After learning this chapter student will be able to:

- Compare the acidic character of alcohols and phenols
- Tell the methods of preparation, physical and chemical properties of alcohols, phenols and ethers

Co scholastic activities: Students will be shown virtual lab activities related to the topics done in this chapter. It will help in enhancing learning process of students.

This will bring social skills, intellectual skills and moral values among students. This ensures that students get to learn effectively.

CLASS - XII

BIOMOLECULES

Month: SEPTEMBER

Objective: After studying this chapter student will be able to:

- Define the biomolecules like carbohydrates, proteins and nucleic acid
- Classify carbohydrates, proteins and nucleic acid on the basis of their structures
- Explain the difference between RNA and DNA
- Appreciate the role of biomolecules in biosystems

Previous knowledge testing: Student would be asked about various biomolecules, DNA /RNA and their general function.

Vocabulary: Monosaccharides, tollens reagent, Fehling solution, peptides

Innovative method/ resources: NCERT Book, reference book and lecture method,

<https://www.youtube.com/watch?v=lkoDv6ggRjE> **Procedure:** Student would be

told about:

- carbohydrates, proteins and nucleic acid
- their structure and their function

Student's participation: Students will be able to recall:

- Structure and reaction of glucose
- Structure and properties of various types of proteins
- DNA, RNA

Recapitulation/ assignment: Student will recapitulate

- Carbohydrates and its types
- Structure of proteins
- DNA, RNA and their function
- NCERT back exercise would be given as assignment.

Integration with other domains: During the study of the chapter, students have to draw various structures of biomolecules; this can be integrated with drawing.

Learning outcome: After learning this chapter student will be able to:

- Tell about the structure and functions of various biomolecules

Co scholastic activities: Students will be shown virtual lab activities related to the topics done in this chapter. It will help in enhancing learning process of students. This will bring social skills, intellectual skills and moral values among students. This ensures that students get to learn effectively.

Aldehydes, Ketones and Carboxylic Acids

Lesson plan

Month- September

Objectives-

Students will understand that: -

- Aldehydes, ketones and carboxylic acids have functional group $>C=O$, known as carbonyl group.
- Majority of biologically important compounds contain carbonyl group. * they play major role in many biochemical processes of life.

Previous knowledge testing-

- Students are expected to know the basic carbon covalent structure of organic compounds. They would be asked about sp , sp^2 , sp^3 hybridised carbon atom. They would also be asked about various functional groups and their structures.

Vocabulary used/Important spellings-

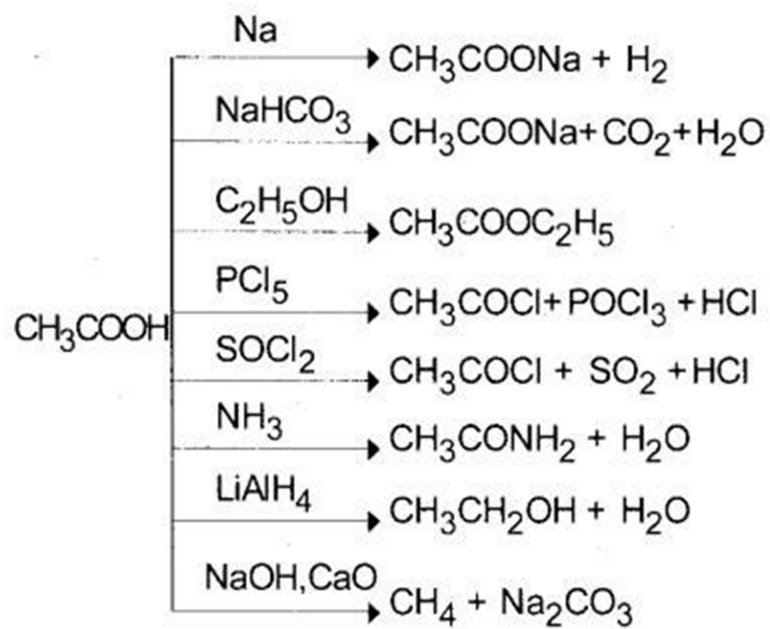
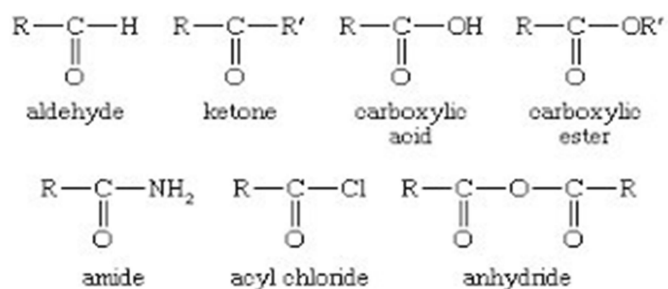
- Carbonyl group, esters, anhydrides, inductive effect, nucleophilic substitution, acetylation, decarboxylation, aldol condensation. ○

Innovative Methods

- Smart class
- Green Board
- NCERT book, Reference book
- lecture method
- video lectures would be shown to the students
- <https://www.youtube.com/watch?v=UmbmTSj73K4>

Procedure-

- Students would be told about compounds containing carbonyl group i.e., aldehydes, ketones and carboxylic acids.
- various methods of preparation of aldehydes, ketones and carboxylic acids would be discussed.
- physical and chemical properties of these compounds would be discussed.
- addition reactions of carbonyl group would be explained to students.
- oxidation, reduction reactions would be discussed.
- reactions of carboxylic acids and its derivatives would be told.



S.No.	Compounds	Aldehyde	Ketone
1.	Schiff's reagent	Gives pink colour.	No colour.
2.	Reaction with NaOH MPBoardSolutions.com	Gives reddish brown colour (except HCHO).	No reaction.
3.	Reaction with Fehling's solution	Gives reddish brown ppt. of Cu_2O .	No ppt. is formed.
4.	Reaction with $\text{C}_2\text{H}_5\text{OH}$ in presence of dry HCl	Forms acetyl compound.	Forms ketals.
5.	Reaction with Tollen's reagent	Gives silver mirror.	No reaction.
6.	Physical state	Liquid B.P. 21°C .	Colourless liquid B.P. 56°C
7.	Pyridine + Sodium nitroprusside	Blue colour.	No effect. MPBoardSolutions.com
8.	Solid <i>m</i> -dinitrobenzene + NaOH solution	No reaction.	Violet colour which disappear on standing.
9.	With Mg-Hg/ H_2O	No reaction.	Gives Pinnacol.
10.	On reduction	Give primary alcohol.	Give secondary alcohol
11.	With chloroform	No reaction.	Give chloretone.

Student participation-

- Students would be able to recall various methods of preparation of aldehydes ,ketones and acids.
- they would be able to differentiate between them based on their properties.
- they would be able to name them according to IUPAC nomenclature.
- they would be able to write reactions of preparation/ chemical properties taking other examples also.

Recapitulation/Assignment-

- Students will recapitulate the various chemical properties of these compounds and complete the reactions.
- they will recapitulate various reaction conditions and catalysts used in the reactions.
- they would be able to tell the effect of various substituents on acidic strength of acids. *NCERT back exercise questions and intext questions would be given as assignment.

Integration with other domains-

- Since during studying this chapter,students have to make many aromatic structures ,this domain could be integrated with geometrical pattern designing.Moreover comparing various compounds integrates with mathematical concept of comparison.

Learning outcomes-

- After learning this chapter, students will be able to
- various carbonyl compounds
- know their methods of preparation and chemical properties
- importance of these compounds ○ know various named reactions

Co-scholastic activities-

- Students will develop the skill of differentiating between aldehydes, ketones and carboxylic acids based on chemical reactions in lab.
- they will be able to critically analyse various chemical reactions shown by these compounds.
- they will know the uses of these compounds by discussing with another and thus show teamwork.

LESSON PLAN

XII CHEMISTRY

CHAPTER-AMINES

Month- OCTOBER

Objective:

To study nomenclature, structure, preparation, properties and uses of amines and diazonium salts.

Previous Knowledge Testing:

Children will be asked about:

- General formula for 1, 2, 3 degree amines.
- Structured formulae of some common amines and nitro compounds to introduce nomenclature.
- Cause of basic nature of amines.

Vocabulary/important spellings:

Tertiary, quaternary, Hoffmann's ammonolysis, Gabriel phthalimide, steric, salvation, steric, inductive, Schiff's base, acylation, benzylation, cacylamine, diazotisation, 2 witter ion, Heinsberg test.

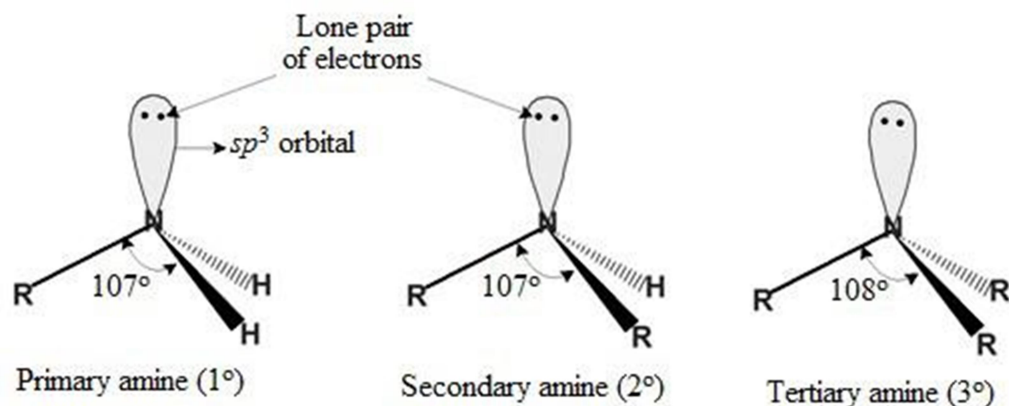
Explanation with innovative methods/aids:

Smart class, ball and stick models of shapes of molecules, diagrams, chemical formulae, chemical equations, tables of basic strength of amines.

Group activity: children will be divided in three groups assigned as 1,2, 3 degree amines to represent preparation and properties of respective titles.

Procedure:

- First of all, structure of NH_3 and amines will be introduced.
- Classification into 1,2, 3, 4-degree salts will be taken up.
- 1-degree amines of RNH_2 .
- 2-degree amines of R_2NH .
- 3-degree amines of R_3N .
- 4-degree salts of $\text{R}_4\text{N}^+\text{X}^-$.
- Methods of preparation e.g. From alkyl halides, alcohols, cyanides, oximes, amides and carbonyls will be discussed with suitable chemical equations.
- Basic nature of amines and effect of substitution on its basic nature will be elaborated.
- Physical and chemical properties e.g. Alkylation, acylation, benzylation, carbylamines reaction, oxidation, halogenations, nitration and sulphonation etc. will be explained.
- Preparation and properties of diazonic compounds will be taken up with respect to benzene diazonium chloride.



(ii) Hinsberg's test $C_6H_5SO_2Cl$	$R_2NH + C_6H_5SO_2Cl$ \downarrow $C_6H_5SO_2NR_2 + HCl$ (Insoluble in alkali)	$R_3N + C_6H_5SO_2Cl$ \downarrow No reaction
(iii) Carbylamine reaction $CHCl_3 + alc. KOH + \Delta$	$C_2H_5NH_2$ Ethylamine (1° amine) \downarrow $C_2H_5NC + 3KCl + 3H_2O$ Ethyl isocyanide (foul smell)	$\text{C}_6\text{H}_5\text{NHCH}_3$ N-methylamine (2° amine) \downarrow No reaction
(iv) Azo dye test $NaNO_2 + \text{dil. HCl}$ ($0-5^\circ C$)	$\text{C}_6\text{H}_5\text{NH}_2$ Aniline \downarrow $\text{C}_6\text{H}_5\text{N}_2^+\text{Cl}^-$ Benzenediazonium chloride	$\text{C}_6\text{H}_5\text{CH}_2\text{NH}_2$ Benzylamine \downarrow $\text{C}_6\text{H}_5\text{CH}_2\text{OH} + \text{N}_2 \uparrow + \text{HCl}$ effervescence
(v) Carbylamine test $CHCl_3 + alc. KOH + \Delta$	$\text{C}_6\text{H}_5\text{NH}_2$ Aniline (1° amine) \downarrow $\text{C}_6\text{H}_5\text{N} \equiv \text{C} + 3KCl + 3H_2O$ (Unpleasant odour)	$\text{C}_6\text{H}_5\text{NHCH}_3$ N-methylaniline (2° amine) \downarrow No reaction

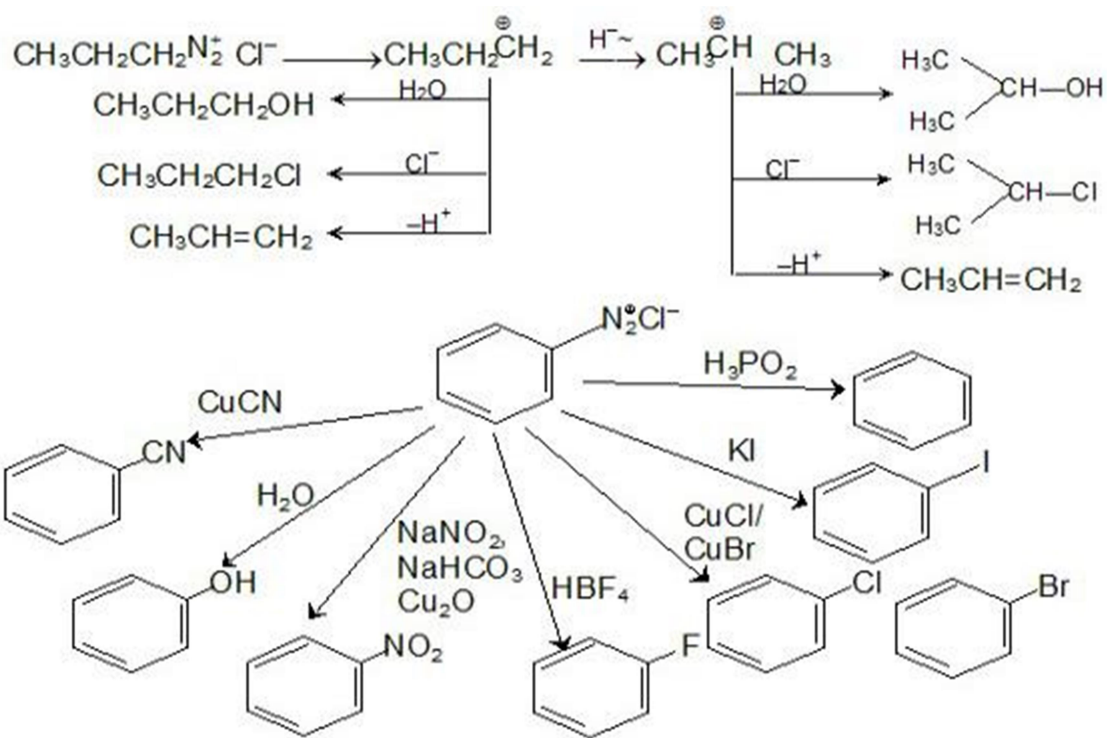
Participation of children:

- After this topic students will be able to identify and draw examples of 1, 2, 3-degree amines, they will be able to determine basicity, order of amines by applying concept of steric factor and salvation factors.
- They will be able to classify EWG and ERG.
- They will be told to write name of reactants and products themselves by applying rules of IUPAC.

Recapitulation:

Chemical properties will be revised and summarised in the form of flow chart presentation for ease of learning. Short oral and written test will be conducted to help in memorizing the equations. Integration with other domains:

- To explain 1, 2, 3- and 4-degree amines and their order of basicity and for balancing; mathematical skill will be integrated.
- Drawing will be integrated to prepare flow sheet representation.



Resource:

NCERT Chemistry for XII.

New course chemistry (XII) Pardeep publication.

YouTube: CBSE India

<https://www.youtube.com/watch?v=ztnPnackibs>

Learning outcome:

After doing this topic, students will be able to:

- Name amines.
- Classify and identify them into 1, 2, 3-degree amines. ○ Know their physical and chemical properties.
- Predict and compare basic nature of amines. · Appreciate chemical characteristics of diazonium chloride. Co-scholastic
 - They will develop skill and competence.
- They will be able to realise importance and application of this topic in various fields of life.
- Critical thinking will be developed by analysing different cases.
- Team work and collaboration will be developed.
- NCERT exercise with practise problems will be given. ○ MCQ, SA, VSA, assertion reasoning type questions will be covered.

Assignment:

NCERT exercise, presentation of chemical properties of amines and benzene diazonium chloride, comparison of basic nature of amines.

MCQ, quiz, reasoning type questions, conversions, fill ups, SA type question.

MONTH-NOVEMBER(BOARD EXAMS UNIT 1)

CLASS - XII

D AND F BLOCK ELEMENTS

MONTH: DECEMBER

Objectives: After studying this chapter, students will be able to:

- Learn the position of d and f block elements in the periodic table.
- Know the electronic configuration of d and f block elements.
- General characteristics of d and f block elements.

Previous knowledge testing: Students would be asked about the configuration of d and f block elements, their general properties.

Vocabulary/Important spellings: Transition elements, interstitial compounds, lanthanoids.

Innov NCERT books, Reference books,

<https://www.youtube.com/watch?v=LzZWHSdYax>

w **Procedure:** Student would be taught about:

- Position of d and f block elements in the periodic table.
- Electronic configuration
- General properties
- Important compounds of transition elements
- The lanthanoids
- Applications of d and f block elements

Student's participation: Student would be asked about:

- Group 3 to 12 elements
- Chemical reactivity of these elements
- Various properties of these elements

Recapitulation/Assignment: from the above topics, following points would be clear to the students

- Various properties of the transition and inner transition elements
- Properties of lanthanoids
- Uses of lanthanoids
- NCERT in text and back exercise questions would be given as assignment.

Integration with other domain: In this chapter various structures will be drawn, hence it can be correlated with drawing.

Learning outcomes: Students will be able to know

- Stability of various oxidation states of d and f block elements
- General characteristics of d and f block elements
- General horizontal and group trends in them
- Study of lanthanoids and their configuration, oxidation state and chemical behavior

Resources: NCERT book, Pradeep's publications

Co scholastic activities: Students will be shown virtual lab activities related to the topics done in this chapter. It will help in enhancing learning process of students. This will bring social skills, intellectual skills and moral values among students. This ensures that students get to learn effectively.

LESSON PLAN

COORDINATION COMPOUNDS

MONTH- DECEMBER

OBJECTIVES:

Students would be able to understand:

- ☐ The postulates of Werner's theory of co-ordination compounds.
- ☐ Write the formulas and names of mononuclear coordination compounds.
- ☐ The rules of nomenclature of coordination compounds.

PREVIOUS KNOWLEDGE:

- ☐ Students would be asked about why the transition metal form a large number of complex compounds in which the metal atoms are bound to a number of anions or neutral molecules.
- ☐ Meaning of oxidation number, central atoms, ligand

VOCABULARY:

Werner's theory, coordination sphere, coordination polyhedron, homoleptic and heterolytic, ambient nucleophile.

CO-SCHOLASTIC ACTIVITIES –

Students would draw the isomerism in coordination

- ☐
- ☐
- ☐
- ☐ Geometric isomerism
- Optical isomerism.

Students develop scientific attitude how to use the techniques. Students learn team work.

ASSESSMENT:

- ☐ **Written tests will be taken.**

MCQ tests would be carried out.

EXPLANATION WITH INNOVATIVE METHODS:



Smart

class

Blackboard

d.

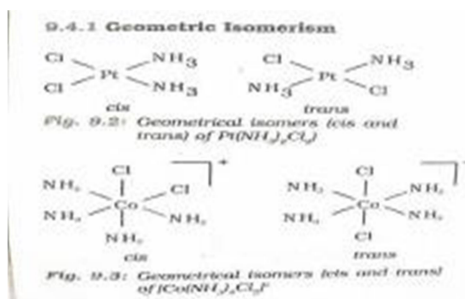
NCERT Text book and exemplar

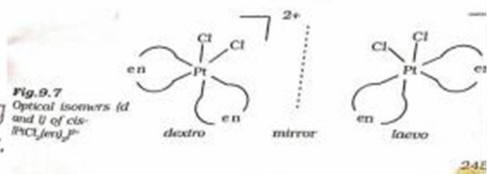
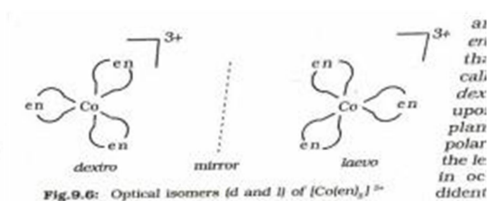
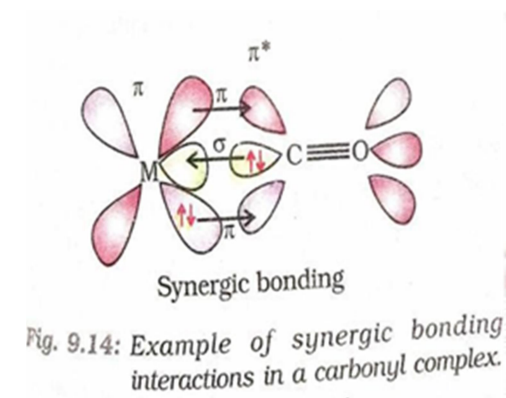
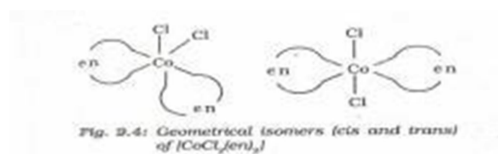
Videos explaining the chapter would be shown to the students <https://www.youtube.com/watch?v=53z1EiflKNI&t=68s>

PROCEDURE:

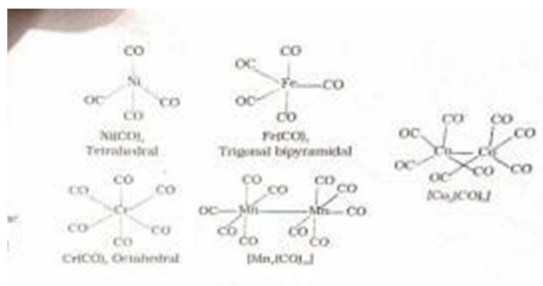
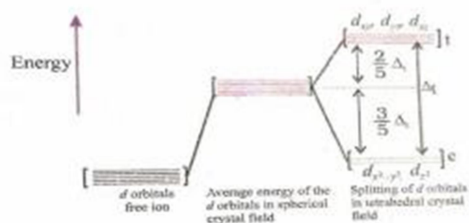
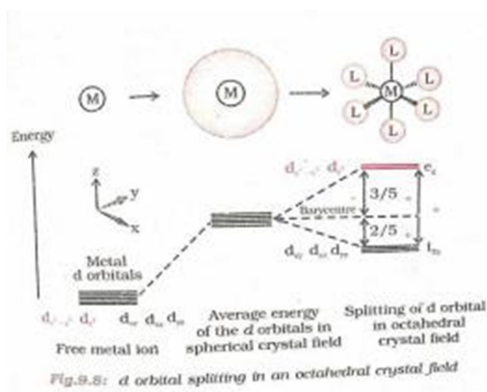
Students will be explained

1. Werner's theory of coordination compounds.
2. The meaning of the terms: coordination entity, centralization, ligand, coordination number, oxidation number, homoleptic and heteroleptic.
3. Learn the rules of nomenclature of coordination compounds.
4. Isomerism in coordination compounds.





5. Understand the nature of bonding in coordination compounds in terms of the valency bonds and crystal field.



5. Importance and application of coordination compounds in our day to day life.

STUDENTS PARTICIPATION:

Students would be able to tell:

1. Names of coordination compounds.
2. Magnetic properties of hybridization of

coordination compounds.

3. Importance and applications of coordination compounds in our day to day life.

Recapitulation

Students would be able to explain:

- a. Names of the coordination compounds.
- b. Meaning of terms related to coordination compounds.
- c. Nature of bonding and magnetic properties based on VBT and CFT theories.
- d. NCERT intext and back exercises will be given as an assignment.

ART INTEGRATION WITH OTHER DOMAINS:

This chapter is related with the following domains:



☐ English language

Art (drawing isomers of coordination compounds)

LEARNING OUTCOMES:

Students would be able to explain:

- ☐
- ☐
- ☐ The importance and application of coordination compounds.

Define different types of isomerism in coordination compounds.

Write the formula and names of mononuclear coordination compounds.

SURFACE CHEMISTRY

CLASS -XII , CHEMISTRY

MONTH- JANUARY

Objectives

- After studying this chapter, students would be able to tell
- Various surface phenomenon like corrosion, adsorption, electrolysis etc.
- Differences between adsorption and absorption and types of adsorption.
- Examples from daily life like dying, dehumidising , _sugar purification etc. * types of colloids and their properties ,uses.

Previous knowledge testing -

- Students would be asked about some surface phenomenon like corrosion, electrode processes, catalysis, dissolution and crystallisation.

Solid materials tend to get covered by molecules of the major components of air namely dioxygen and dinitrogen.

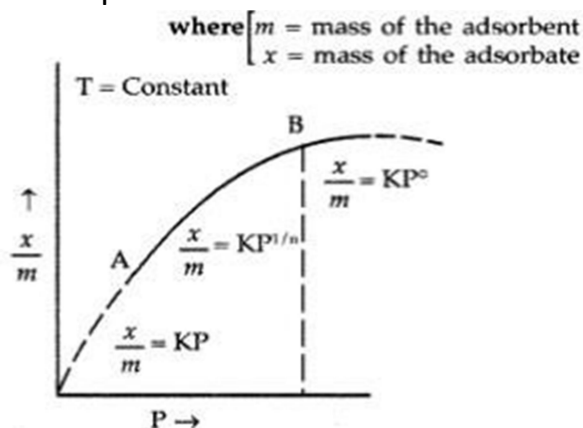
Vocabulary used/Important spelling-

○ adsorption, desorption, chemisorption, physisorption, colloids, lyophilic, lyophobic, catalysis, emulsion, heterogenous, homogenous, enzymes, specificity, reversible, electrophoresis, electro-osmosis, isotherms.

○ electrode processes, catalysis, dissolution and crystallisation. Solid materials tend to get covered by molecules of the major components of air namely dioxygen and dinitrogen.

Procedure

- they would be explained the mechanism of adsorption,
- Students would be told about the factors controlling adsorption from gases and solutions on solids.
- adsorption results would be explained to them on the basis of Freundlich adsorption isotherm.



Variation of x/m with increase in pressure at constant temperature
(Freundlich adsorption isotherm)

Integration with other domains-

- It can be integrated with medicine field because many medicines like cough syrup etc are colloids. Students can know their methods of preparation and properties.

Participation of students-

- Students will be able to relate various activities like catalysis, dyeing, metallurgical processes with phenomenon of adsorption.
- they will be able to explain the use of silica gel as dehumidiser, use of masks by miners etc.
- they will know about the role of zeolites in petrochemical industry for cracking of hydrocarbons.

Recapitulation

- Students would be able to enumerate the nature of colloidal state.
- they will know about the preparation, properties and purification colloidal. ○ they will be able to classify emulsions and describe their preparation and properties.

Assignment-

- Daily life phenomenon like rusting, dyeing, catalysis, etc would be discussed in class.
- NCERT solved and unsolved problems would be discussed in the class.
- concept-based questions would be discussed from reference book.

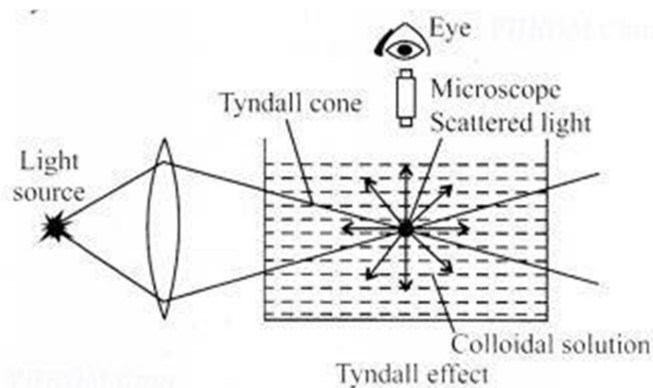
Learning outcomes-

- Students would now be knowing about

- electrophoresis, tyndall effect, and various methods of preparation and properties of colloids.
- the catalytic activity, types of catalytic reactions
- adsorption theory of catalysis
- various surface phenomenon like electrochemical reactions, corrosion, adsorption

Co- scholastic activities-

- Students would be able to critically analyse the preparation of colloidal solutions, like starch ,egg albumin, etc.
- students will develop the skill of separation of flower pigments/ different dyes by technique of chromatography.
- students will learn team work while showing tyndal effect and coagulation of milk by adding electrolyte.



MONTH- FEBRUARY (REVISION AND PRACTICAL EXAMS)

