BUDHA DAL PUBLIC SCHOOL PATIALA ANNUAL CURRICULUM PLAN SESSION 2023 – 2024

CLASS: XI SUBJECT: CHEMISTRY

Ch:1(BasicConceptsOfChemistry)

Month-May

ClassTransaction-18Periods

Objective:

To introduce the students to the field of chemistry, its basic concepts which help in understanding the text.

Previous knowledge testing:

Students will be asked about atom, molecule, mole, laws and various chemical formulae of some common substances.

Vocabulary used:

Multiple, reciprocal, empirical, limiting reagent, percentage.

Important spellings:

Scientific notation, significant figures, reciprocal, Avogadro, precision, empirical, accuracy.

Explanation with innovative methods/ Aids used:

Smart class,examples of various chemicals to explain laws of chemical combination,quiz, MCQ, practise problems, student teacher interaction, flow chart(atomic masses and chemical formulae), peer assessment. Roleplay activity by assigning the role of mole to each peer in class.

Table 1.1 Base Physical Quantities and their Units

Base Physical Quantity	Symbol for Quantity	Name of SI Unit	Symbol for SI Unit
Length	l	metre	m
Mass	m	kilogram	kg
Time	t	second	s
Electric current	I	ampere	A
Thermodynamic temperature	T	kelvin	K
Amount of substance	n	mole	mol
Luminous intensity	I_v	candela	cd

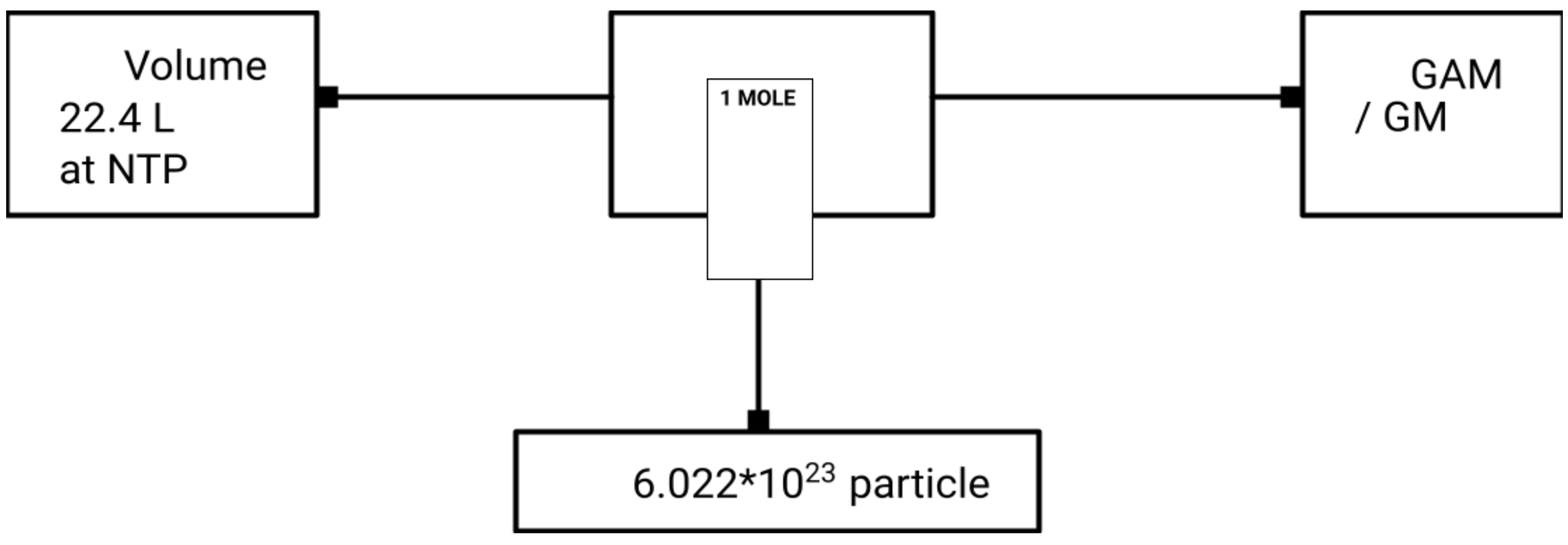
Symbols of Common Elements

Element	Symbol	Element	Symbol	Element	Symbol
Aluminum	Al	Gold	Au	Platinum	Pt
Antimony	Sb	Helium	He	Plutonium	Pu
Argon	Ar	Hydrogen	H	Potassium	K
Arsenic	As	Iodine	I	Radium	Ra
Barium	Ba	Iron	Fe	Silicon	Si
Bismuth	Bi	Lead	Pb	Silver	Ag
Boron	B	Lithium	Li	Sodium	Na
Bromine	Br	Magnesium	Mg	Strontium	Sr
Cadmium	Cd	Manganese	Mn	Sulfur	S
Calcium	Ca	Mercury	Hg	Tin	Sn
Carbon	C	Neon	Ne	Titanium	Ti
Chlorine	Cl	Nickel	Ni	Tungsten	W
Chromium	Cr	Nitrogen	N	Uranium	U
Cobalt	Co	Oxygen	O	Xenon	Xe
Copper	Cu	Palladium	Pd	Zinc	Zn
Fluorine	F	Phosphorus	P		

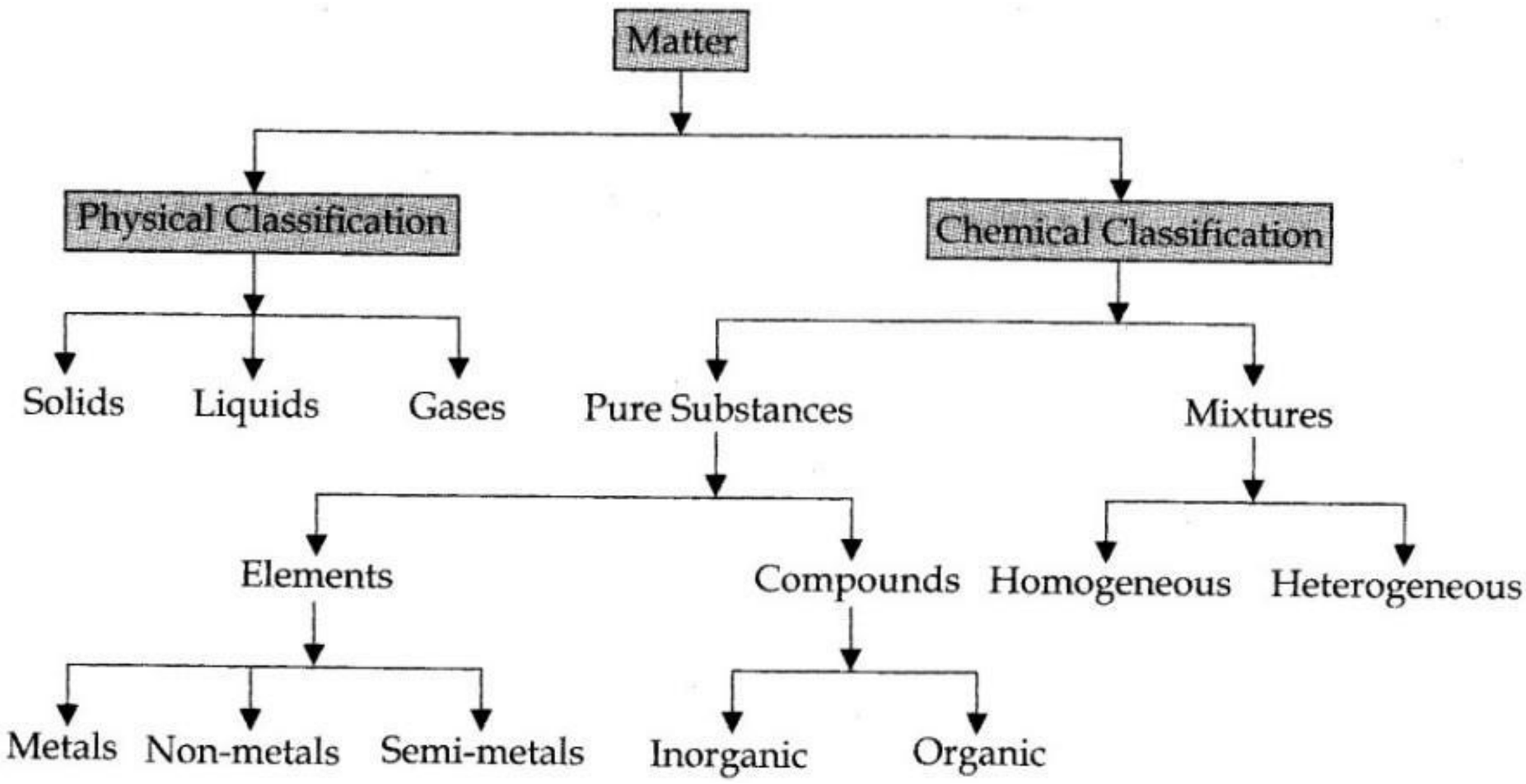
Element name	Atomic number	Atomic mass	Element name	Atomic number	Atomic mass
Hydrogen	1	1	Sodium	11	23
Helium	2	4	Magnesium	12	24
Lithium	3	7	Aluminium	13	27
Beryllium	4	9	Silicon	14	28
Boron	5	11	Phosphorus	15	31
Carbon	6	12	Sulphur	16	32
Nitrogen	7	14	Chlorine	17	35.5
Oxygen	8	16	Argon	18	40
Fluorine	9	19	Potassium	19	39
Neon	10	20	Calcium	20	40

Procedure- challenges:

- Precision and accuracy will be introduced as closeness to the measurements.
- Significant figures will be explained with suitable numerical problems.
- Mole will be introduced.



- Definition and explanation about atom, molecule, atomic mass, molecular mass will be done by taking C-12 as reference.
- Isotopes, isotones, isobars will be described
- Empirical and molecular formula will be defined with examples
- Stoichiometric relations(m/m, m/v, v/v) in chemical equations will be told.
- Limiting reagent will be explained along numerical problems.



Participation of students:

- While doing this topic students will be able to tell about various formulae of different elements like hydrogen, oxygen, nitrogen etc.
- They will do numericals on given formula.

n=mass/ molar mass	$n=N/N_0$

- They will classify matter on physical and chemical basis.
- They will respond to explain about element, compound and mixture and solids, liquids and gases.

Recapitulation:

After explaining this topic students will be able to review.

- Importance of chemistry in daily life
- Statement of laws of chemical combination- law of constant proportion, multiple proportion, reciprocal proportionand apply them.
- Learn to solve numerical problems based on significant figures and rules applied on them.
- Define molecular and empirical formula.
- Understand stoichiometry in chemical equations.

SOME BASIC CONCEPTS OF CHEMISTRY

(1). Number of molecules in W(g) of substance $= \frac{W(g) \times N_A}{GMM}$

(2). Molality (m) = $\frac{\text{No. of moles of solute}}{\text{Mass of solvent in kg}}$

(3). Number of molecules in V litre of gas at S.T.P. $= \frac{VN_A}{22.4}$

(4). Number of gram atoms = $\frac{W(g)}{GAM}$ (GAM → gram atomic mass)

(5). Number of gram molecules = $\frac{W(g)}{\text{Gram molecular mass}}$

(6). Dilution formula : $M_1V_1 - M_2V_2$

For mixing two solutions of the same substance

$M_1V_1 + M_2V_2 - M_3(V_1 + V_2)$

Molarity can be directly calculated from % by mass (w/w) if density is known

Molarity $= \frac{\% \times 10 \times d}{GMM}$

(7). Mass of 1 atom of element $= \frac{GAM}{N_A}$

(8). Mass of 1 molecule of substance $= \frac{MM}{N_A}$ (MM →Molar mass)

(9). $T(K) = T(^\circ C) + 273.15$

(10). Relative atomic mass = $\frac{\text{Mass of an atom of the element}}{\frac{1}{12} \times \text{Mass of an atom of carbon (C-12)}}$

(11). Number of molecules in n moles of substance $= n \times N_A$

(12). Mass % of an element in a compound $= \frac{\text{Mass of that element in 1 mole of the compound}}{\text{Molar mass of the compound}} \times 100$

(13). Mass percent $= \frac{\text{Mass of solute}}{\text{Mass of solution}} \times 100$

(14). $\frac{X_B}{1 - X_B} = \frac{\text{molality} \times M_A}{1000}$ where M_A - mass of solvent

(15). Molarity (M) = $\frac{\text{No. of moles of solute}}{\text{Volume of solution in litres}}$ mole / L

(16). Avogadro's No. $N_A = 6.022 \times 10^{23}$

(17). $T(^\circ F) = \frac{9}{5} T(^\circ C) + 32$

(18). Molecular mass $= 2 \times$ vapour density

(19). Mole fraction of A = $\frac{\text{No. of moles of A}}{\text{No. of moles of solution}}$

AglaSem Admission

Integration with other domains:

This topic is integrated with skills of physical measurements and mathematical skills.

Learning outcome:

After doing this topic students will be able to

- Explain importance and scope of chemistry.
- Understood, inspect and analyse the application of principles of chemistry in other fields of life.
- Understand, inspect and analyze the application of principles of chemistry in other fields of life.
- Understand and explain la of chemical combination, Daltons atomic theory.
- Know concept of atoms, molecule and elements, atomic and molecular pass.
- Understand and apply mole concept, empirical and molecular mass.
- Understand and apply mole concept,empirical and molecular formula and stoichiometric relationships m/m, m/v, v/v in chemical equations.

- They will be able to realise importance and application of principles of chemistry in various areas/fields of life.
- Critical thinking ill be developed with the laws of chemical combustion by analysing relations existing between different compounds.
- They will be able to apply established principles to justify and observation.
- Team work and collaboration skill will be inculcated.

Resource: NCERT book & Pardeep Publications

Co-Scholastic Activities

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

Feed Back & Remedial Teaching

- Step by Step instructions would be given to slow learning students such students would be take out of normal classroom and taught in a different environment. They would be provided with routine assignments and practice activities.

- Inclusive Practices and Full Participation without discrimination. Lesson Plan is so designed so as to provide of children belonging to all Minority Communities and Particularly those Communities that are educationally under represented.

Sustainable Development Goal:-

Through teaching this lesson, we may prepare students to gain the goal of finding concentration of contaminents in water and attain goal of clean+save water.

Assignment:

- NCERT intext exercise and back exercise.
- Numerical problems for practise.
- Statement and explanation of las of chemical combinations

Chapter:2(StructureOfAtom) Month-April

ClassTransaction-18Period

Objective –

The main objective to study chapter Atomic Structure is to inculcate knowledge of: -

- Wave Nature of Electromagnetic Radiations Photoelectric Effect
- Black Body Radiation
- Quantum Numbers
- To learn to write Electronic Configuration of the Elements

Previous Knowledge Testing –

Students should have the knowledge of: -

- Mole
- Atomic Numbers Mass Number
- Symbol of Elements etc

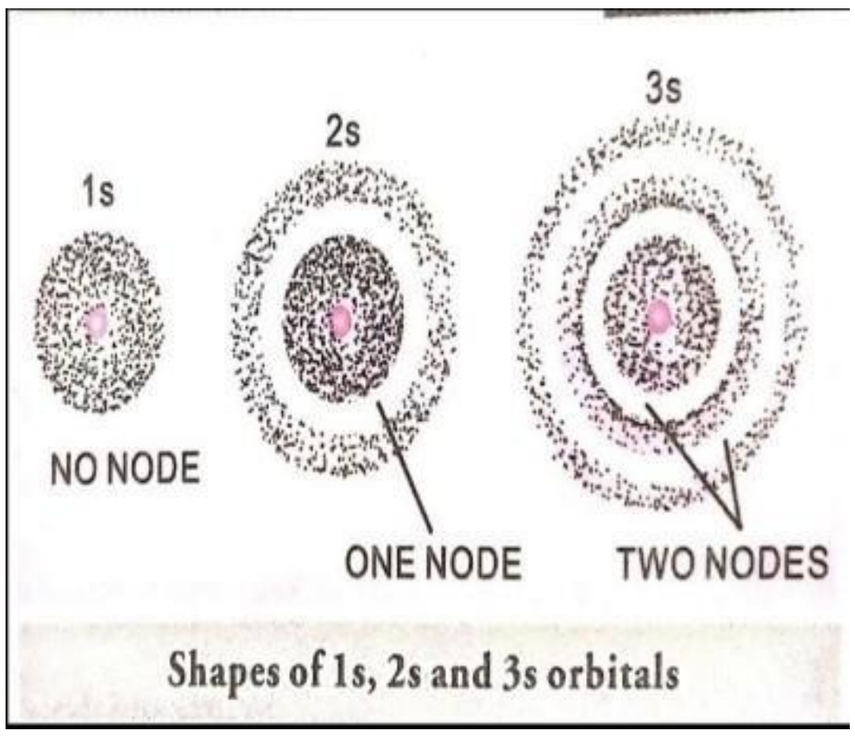
Vocabulary and Important Spellings –

- Electromagnetic Spectrum Wave Number
- Velocity
- Wavelength
- Nano

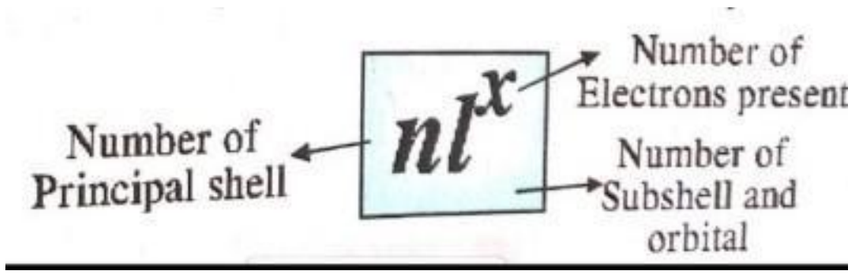
- Picometer
- Planck's Quantum Theory Quantum Numbers Aufbau Principle
- Hund's Rule
-

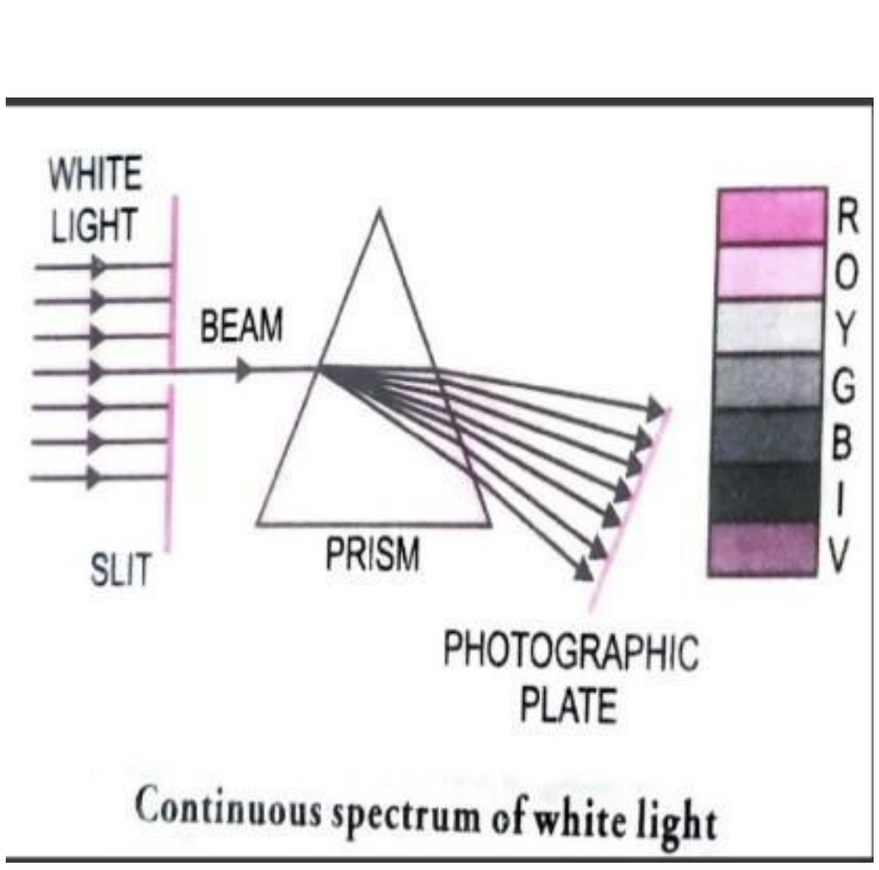
Innovative Methods –

- NCERT Book
- Smart Board Periodic Table
-

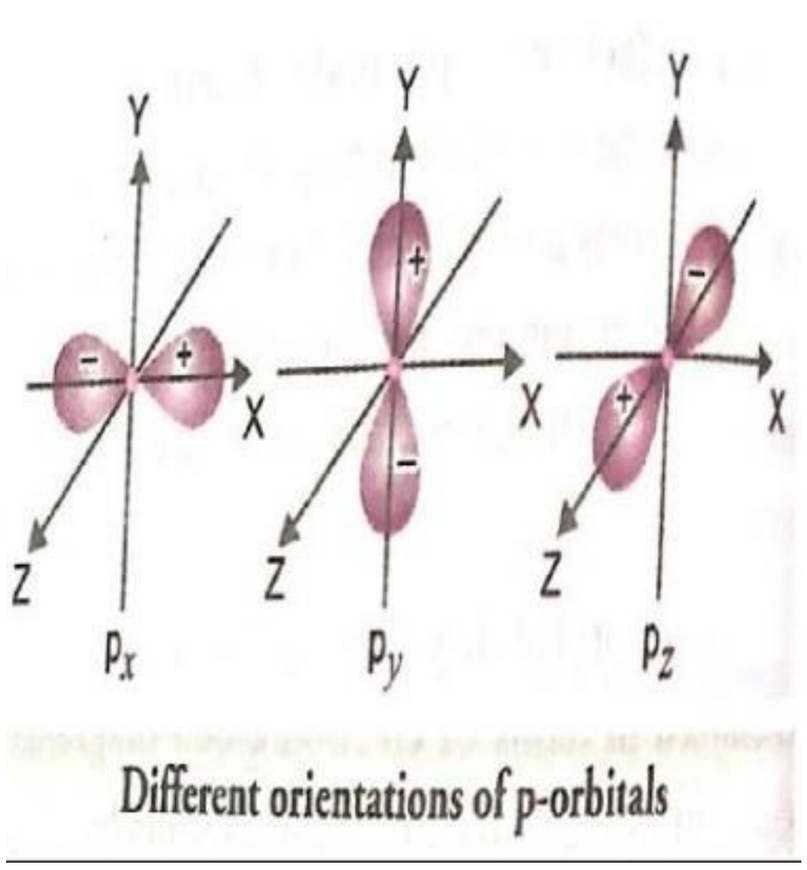


Shapes of 1s, 2s and 3s orbitals





Continuous spectrum of white light

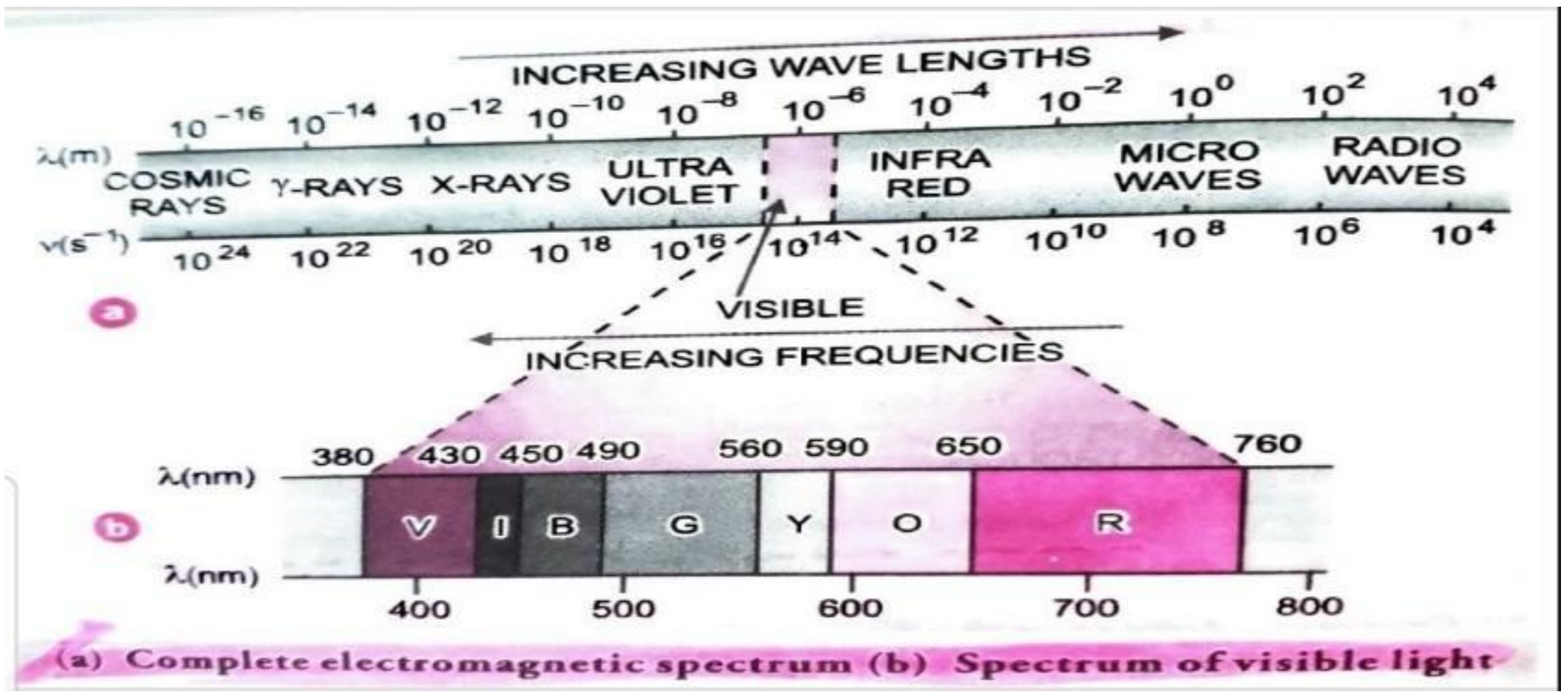


Different orientations of p-orbitals

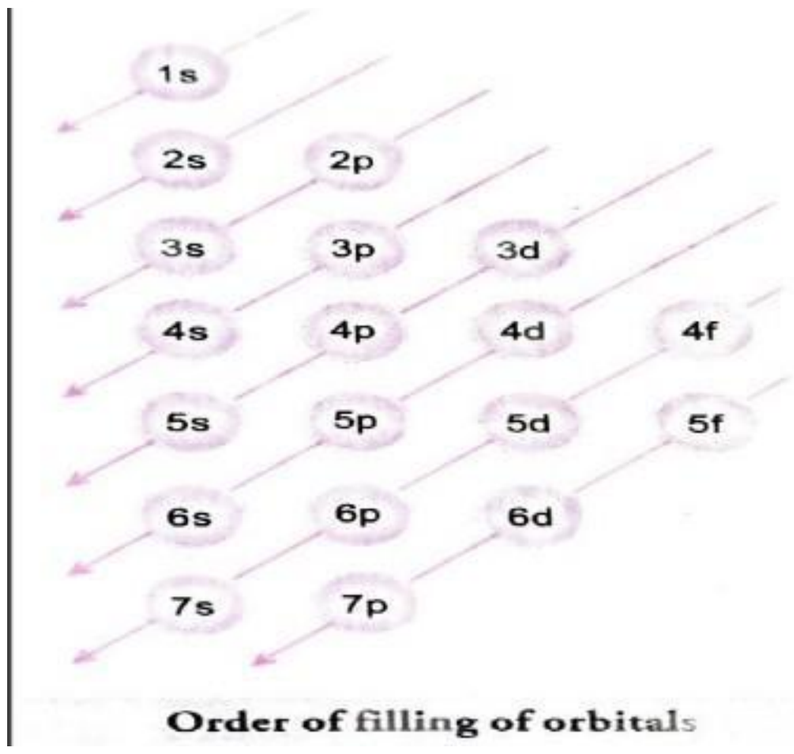
Procedure –

Students would be told about the following topics: -

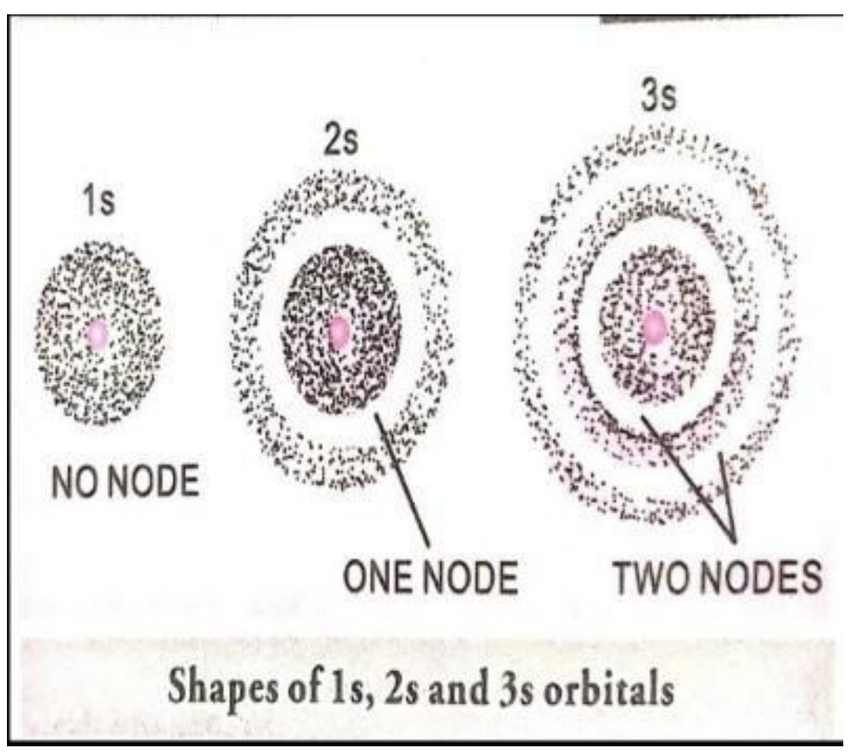
- Electrical Nature of Matter
- J.J Thompson, Rutherford and Bohr Model of an Atom Atomic Number and Mass Number
- Wave Nature of Electromagnetic Radiations Particle Nature of Electromagnetic Radiations Photoelectric Effect and Black Body Radiations Atomic Spectra
- Dual behaviour of Matter Heisenberg's Uncertainty Principle
- Quantum Mechanics and Quantum Numbers



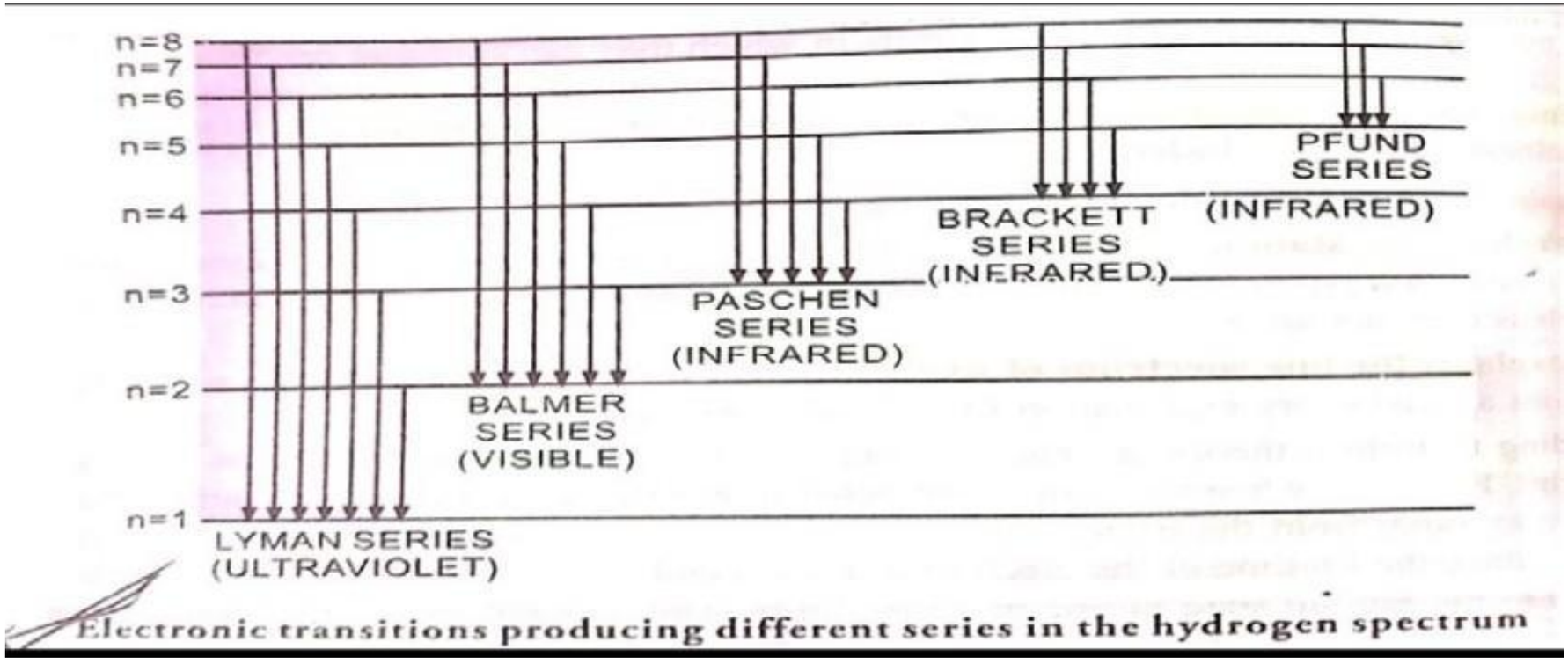
(a) Complete electromagnetic spectrum (b) Spectrum of visible light



Order of filling of orbitals



Shapes of 1s, 2s and 3s orbitals



Electronic transitions producing different series in the hydrogen spectrum

Students Participation –

Students would be able to explain: -

- Phenomenon like Photoelectric Effect $h\nu = h\nu^{o} + \frac{1}{2} mv$
- Writing of Electronic Configuration in terms of S, P, d, f Orbits
- Students would be able to numerical of [$C = \nu \times \lambda$, = $\frac{1}{\lambda}$, etc
- students would be able to explain and draw the shape of S , P , d , f orbitals

Student Recapitulations –

Students will be able to tell Symbols and formulae of: -

- Like Energy Wavenumber, Photoelectric Effect, Quantum Nos And apply on Questions given from NCERT and Assignment

Integration with other Domains –

The chapter Atomic Structure is integrated with: -

- Language

Mathematics to solve Numerical

- Art for drawing shapes of orbitals

Learing Outcomes

Students will be able to know :-

- Fundamental particles of atom. Spectra of atom.
- Quantum Number. Shapes of Orbitals.
- Electronic Configuration of Elements.

Resources- NCERT Book (DINESH Publications Book)

Co – Scholastic Activities –

Students will be shown virtual lab activities related to the topics done in the class. It will help in enhancing the learning process.

Feed Back and Remedial Teaching:-

- The students will be given objective worksheet and incorrect options will be discussed. Retest, Assignment , Practice Question would be given for preparation.

Sustainable Development Goals:-

By teaching this chapter we may proceed towards achieving the SPG of same energy because it is based on photoelectric effect in this chapter.

Chapter:3 (ClassificationOfElementsAnd PeriodicityinProperties)

Month-April&May ClassTransaction-12Periods

Objective –

With the knowledge of this chapter students will be able to study Modern Periodic Table in detail

Previous Knowledge Testing –

Students will be asked about: -

- S, p , d ,f blocks and their general Electronic Configuration
- Symbols and Atomic No's of Common Elements

Vocabulary / Important Spellings –

- Group Period
- Atomic Size
- Ionization Energy Electron Gain
- Enthalpy Valency

- Electronegativity Mendeleev,
- etc

Innovative Method –

- Chart of Modern Periodic Table Smart Class
- NCERT Book

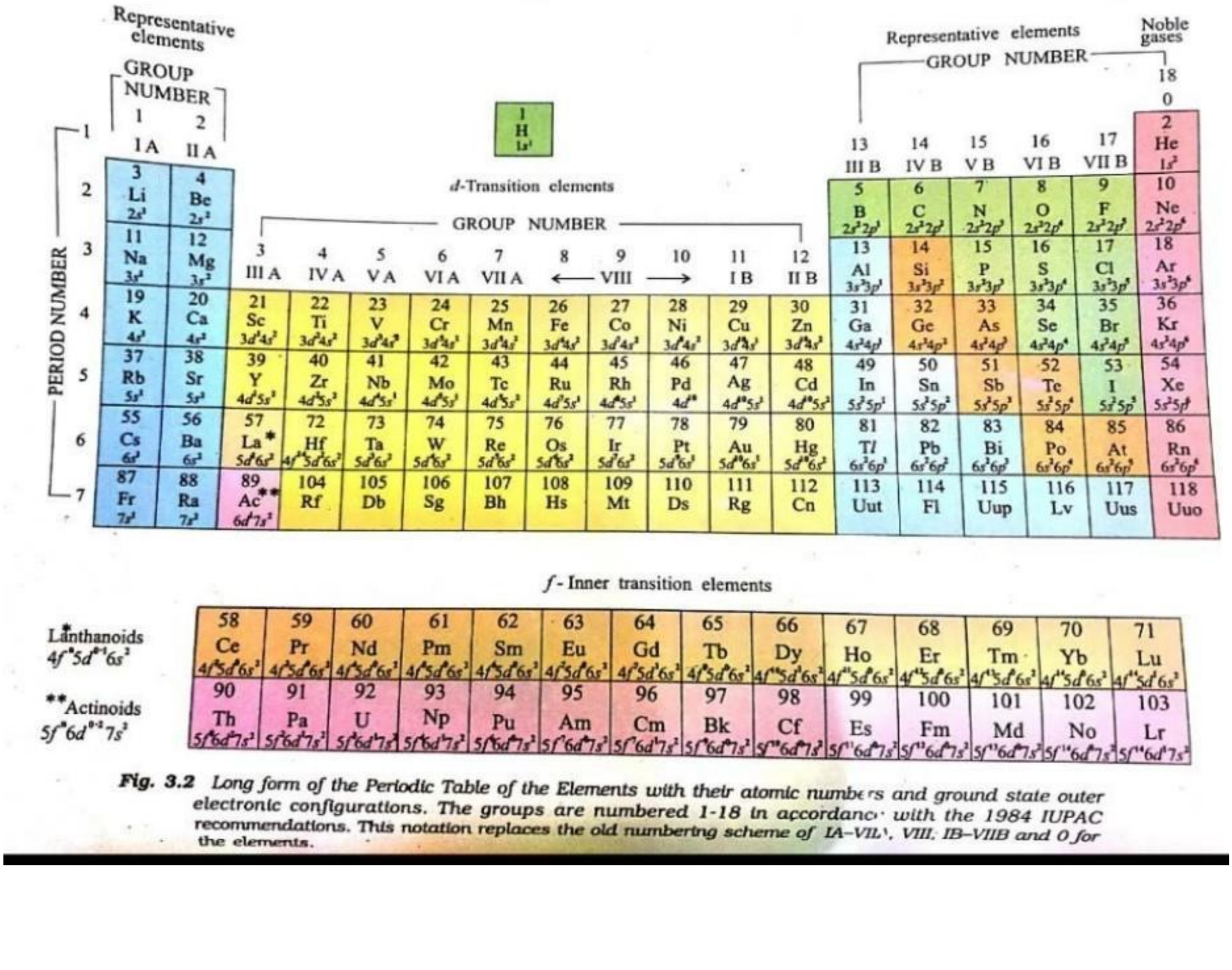


Fig. 3.2 *Long form of the Periodic Table of the Elements with their atomic numbers and ground state outer electronic configurations. The groups are numbered 1-18 in accordance with the 1984 IUPAC recommendations. This notation replaces the old numbering scheme of IA–VIIA, VIII, IB–VIIB and 0 for the elements.*

Procedure –

Students would be told about the following topics: -

- Earlier Classification of Elements Dobereiner's, Mendeleev's Periodic Table Need of Modern Periodic Table
- Study of Modern Periodic Table in detail

- Periodic Properties like Atomic Size, Ionization Energy, Electron Gain Enthalpy, Electronegativity
- Diagonal Relationship Valency and Oxidation State

Table 3.1 Dobereiner's Triads

Element	Atomic weight	Element	Atomic weight	Element	Atomic weight
Li	7	Ca	40	Cl	35.5
Na	23	Sr	88	Br	80
K	39	Ba	137	I	127

Students Participation –

Students will participate in: -

- Writing Symbols Atomic Numbers
- Electronic Configuration in terms of S, P, d, and f Quantum Numbers Discussing Periodic Properties and Exceptional Behaviour of Certain Elements

Recapitulation and Assignments –

- After discussing chapter, Students will Recapitulate all important points of Modern Periodic Table
- They will be able to answer exceptional behaviour of Cl and F, O and S regarding Electron Gain Enthalpy

Integration with other Domains –

The chapter Periodic Classification is integrated with: -

- Language (English) Maths

Resources-NCERT BOOK (Dinesh Publication Book) Co-Scholastic Activities:-

- With the knowledge of the chapter, student will be able to perform following activities.

- To assign the position of elements in periodic table.
- To study properties of all elements including the elements which are not discovered yet. To study the periodic table systematically.

Assignment Items

NCERT Intext Questions and Back Exercises

Feed Back And Remedial Teaching:-

- The students will be given objective questions worksheet.
- All questions with correct and incorrect option will be discussed. Alternative methods of learning will be discussed in class.
- Case based study questions will also be discussed in class.

Chapter:4(ChemicalbondingAndStructure)

Month-July

Number of Periods: 20

Objective:

To give insight picture of concept of cause, types and forces which exist in a chemical bond and esulting shapes acquired due to bonding.

P.K Testing :

What is the nature of forces which hold the atoms together?

Why do atoms have fixed combining capacity?

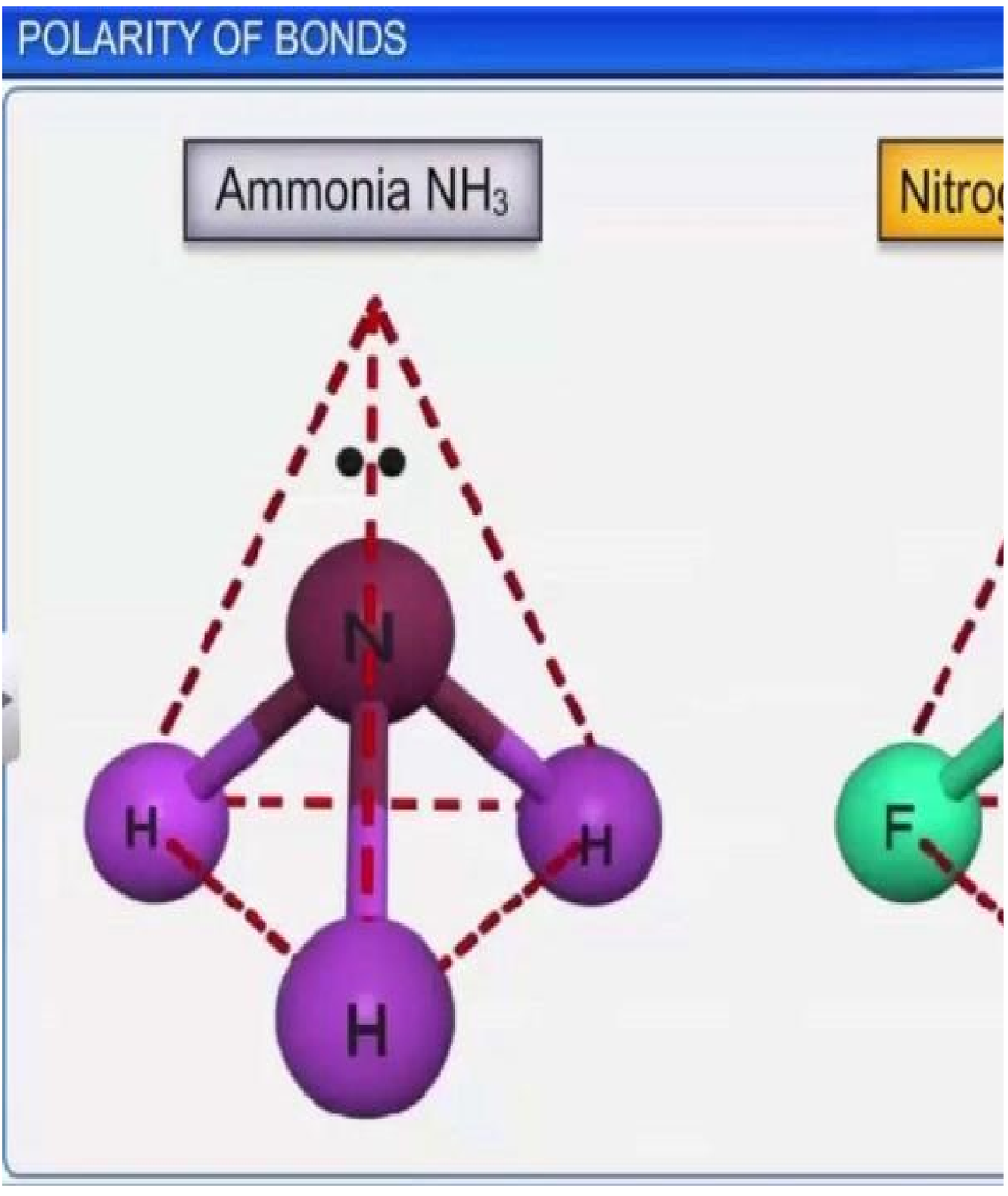
How is electronic configuration related with bonding?

Vocabulary used:

Octet, paramagnetic, diamagnetic, lattice, electro-negativity, lewis, coordinate, polarity, resonance, distorted, sew saw, ionisation, pyramidal, octahedral, tetrahedral, trigonal.

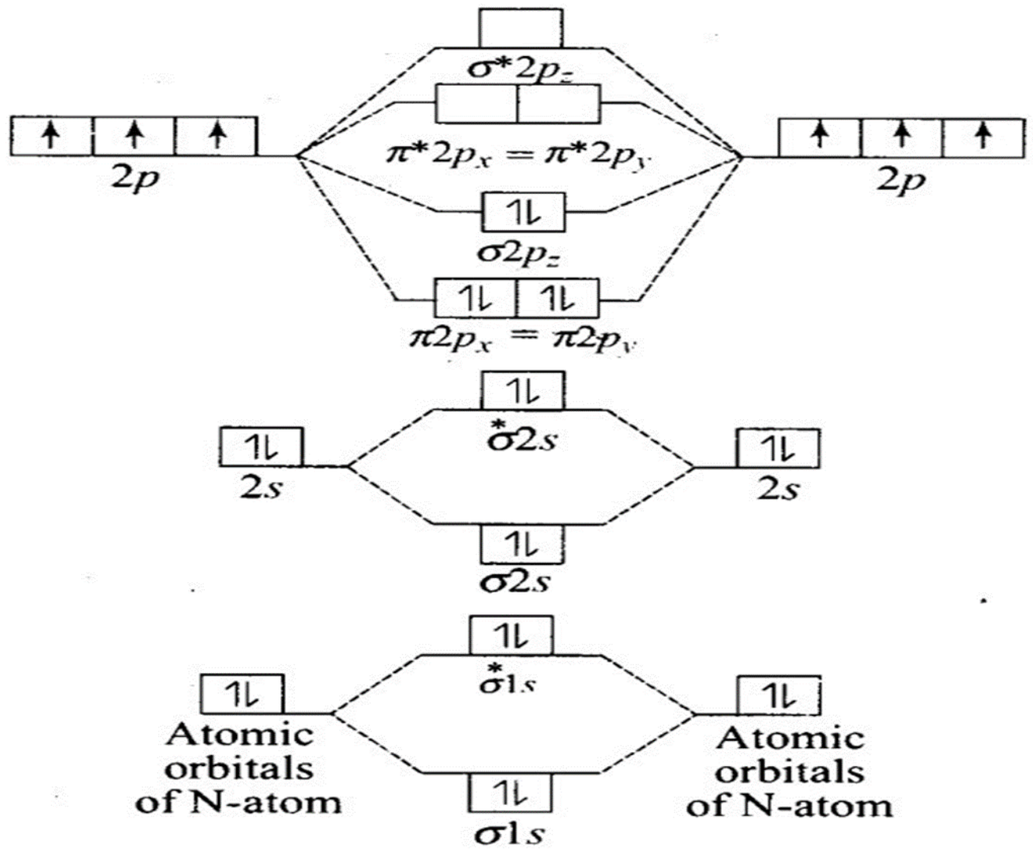
Explanation with innovative methods/ aids used:

Student teacher Interaction, smart class, quiz, group discussion, MCQ practice
s. Ball and stick models, group activity etc.


POLARITY OF BONDS
Ammonia NH_3
Nitrog
N
H
H
H
F

Procedure:

- Children will be told about chemical bond as a force of attraction which help to bind the atoms together.
- Definition and and formation of ionic and covalent bonds will be discussed along with example.
- Definition and examples of coordinate bond will be taken.
- Importance and meaning of lattice enthalpy will be discussed.
- Dipole moment will be explained along with its significance.
- Concept of hybridisation will be explained, types- sp, sp^2, sp^3, sp^3d, sp^3d^2 etc. will be explained with the help of examples and models.
- Phenomenon of resonance will be discussed as delocalisation of e^{-1}.
- Different theories like VBT, VSEPR, MOT will be introduced to explain bonding and their role in describing characteristics of molecules.
- Special case of hydrogen bonding, its types and significance will be explained.



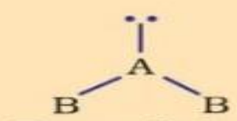
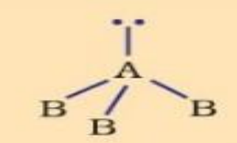
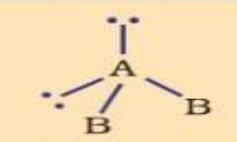
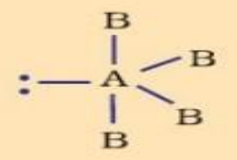
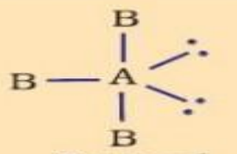
Molecular orbitals of N_2 molecule

Participation of children:

- After knowing lewis concept, children will be able to write various lewis structures of elements and molecules to predict bonding.
- They will try to find out polarity of molecules
- They will draw presentation of various molecules based on concept of hybridisation.
- They will be told to draw molecular energy levels diagram themselves for N_2, O_2, He and their ions and calculate B.O to find their stability and magnetic nature.

Recapitulation:

- Small written test will be conducted to judge their learning of shapes and molecular orbital diagrams of various molecules. They will be briefed about ionic bond, covalent bond, dipole moment, resonance, bond parameters.
- They will be depicted about difference in sigma and pi bond, BMO and AMO, MO and AO.
- VBT, VSEPR, MO theory will be summarised.

Molecule type	No. of bonding pairs	No. of lone pairs	Arrangement of electron pairs	Shape	Examples
AB_2E	2	1	 Trigonal planar	Bent	SO_2, O_3
AB_3E	3	1	 Tetrahedral	Trogonal pyramidal	NH_3
AB_2E_2	2	2	 Tetrahedral	Bent	H_2O
AB_4E	4	1	 Trigonal bi-pyramidal	See saw	SF_4
AB_3E_2	3	2	 Trigonal bi-pyramidal	T-shape	ClF_3
AB_5E	5	1	 Octahedral	Square pyramid	BrF_5
AB_4E_2	4	2	 Octahedral	Square planar	XeF_4

Shape of Some Simple Molecules

Type of molecule	No. of electron pairs	No. of bond pairs	No. of lone pairs	Type of hybridisation involved	Geometry of molecule	Examples
AB_2	2	2	0	sp	Linear	BeF_2, $[Ag(NH_3)_2]^+$
AB_3	3	3	0	sp^2	Trigonal planar	BF_3, $AlCl_3$
AB_2L	3	2	1	sp^2	V-shaped	$SnCl_2$, $PbCl_2$
AB_4	4	4	0	sp^3	Tetrahedral	CH_4, SiF_4, CCl_4
AB_3L	4	3	1	sp^3	Trigonal pyramidal	NH_3, PX_3 (X = F, Cl, Br, I)
AB_2L_2	4	2	2	sp^3	V-shaped	H_2O, OF_2, SCl_2
AB_5	5	5	0	sp^3d	Trigonal bipyramidal	PF_5, PCl_5, $SbCl_5$
AB_4L	5	4	1	sp^3d	See saw	SF_4, $TeBr_4$
AB_3L_2	5	3	2	sp^3d	T-shaped	ClF_3, $XeOF_2$
AB_2L_3	5	2	3	sp^3d	Linear	XeF_2, ICl_2^-, I_3^-
AB_6	6	6	0	sp^3d^2	Octahedral	SF_6
AB_5L	6	5	1	sp^3d^2	Square pyramidal	IF_5, ClF_5, BrF_5
AB_4L_2	6	4	2	sp^3d^2	Square planar	XeF_4, ICl_4^-
AB_7	7	7	0	sp^3d^3	Pentagonal bipyramidal	IF_7, XeF_6

Species	Total electrons	Configuration	Bond order	Magnetic character
O_2	16	$KK\sigma(2s)^2\,\sigma^*(2s)^2$ $\sigma(2p_z)^2\,\pi(2p_x)^2 = \pi(2p_y)^2$ $\pi^*(2p_x)^1 = \pi^*(2p_y)^1$	$\frac{(8-4)}{2} = 2.0$	Paramagnetic
O_2^+	15	$KK\sigma(2s)^2\,\sigma^*(2s)^2$ $\sigma(2p_z)^2\,\pi(2p_x)^2 = \pi(2p_y)^2$ $\pi^*(2p_x)^1$	$\frac{(8-3)}{2} = 2.5$	Paramagnetic
O_2^-	17	$KK\sigma(2s)^2\,\sigma^*(2s)^2$ $\sigma(2p_z)^2\,\pi(2p_x)^2 = \pi(2p_y)^2$ $\pi^*(2p_x)^2 = \pi^*(2p_y)^1$	$\frac{(8-5)}{2} = 1.5$	Paramagnetic
O_2^{2-}	18	$KK\sigma(2s)^2\,\sigma^*(2s)^2$ $\sigma(2p_z)^2\,\pi(2p_x)^2 = \pi(2p_y)^2$ $\pi^*(2p_x)^2 = \pi^*(2p_y)^2$	$\frac{(8-6)}{2} = 1.0$	Diamagnetic

$\therefore$ Relative order of stability is $O_2^+ > O_2 > O_2^- > O_2^{2-}$.

Integration with other domains:

- This topic will be primarily indicated with geometry to represent shapes of molecules by act of cutting and pasting.
- Ball and stick models will be told to prepare.
- Statue project of molecular orbital diagram for H_2, O_2, He etc. will be told to prepare.

Resources:

- NCERT book of XI chemistry
- Modern abc of XI chemistry
- Periodic table
- Youtube-shiksha house
- www.learncbse.in/chemicalbonding

Learning outcomes: scholastic knowledge

After doing this topic students will come to know about:

- Definition, types, causes and examples of chemical bonding.
- Representation of formation of ionic bond in NaCl, $MgCl_2$, CaO etc.
- Representation of covalent bonding in various molecules like CH_4, C_2H_4, H_2O, NH_3, S.
- Calculate formal charge.

- Explain dipole moment and its significance.
- Concept of VSEPR theory LP:LP > LP:BP > BP:BP.
- Shapes of molecules with regular and distorted geometry.

Feed Back and Remedial Teaching –

Remedial Teaching is provided to those students who have fallen back in studies . They need short term learning assistance. They would be given step by step instructions so that the taught topics become clear to them.

Inclusive Properties And Full Participation with Discrimination-

There will be enabling mechanism for providing children with special need (CWSN).

Chapter:5 (Chemical Thermodynamics)

Month-August

No.OfTeachingPeriods-23

Objective –

The objective to study this chapter is that it helps to inculcate heat changes in various Thermodynamic Processes. To study about Internal Energy, Work Done, Law of Conservation of Energy, Spontaneous and Non-Spontaneous processes.

Previous Knowledge Testing –

Student should know about: -

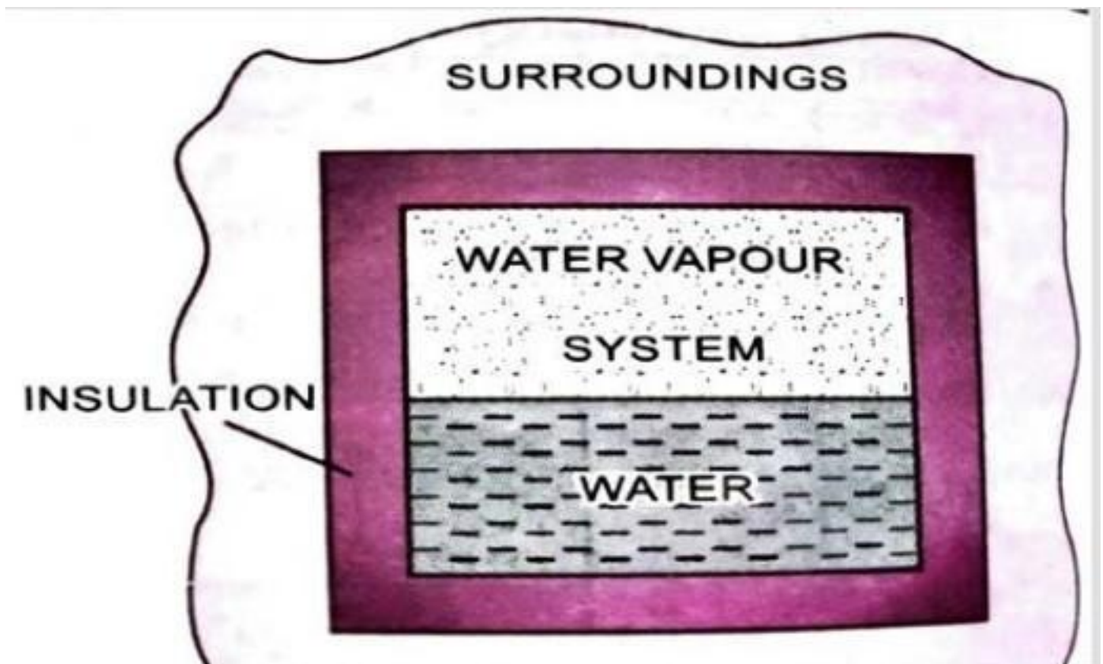
- Types of Energy
- Chemical Changes
- Mechanical Work Fuel
- Cell or Dry Cell etc.

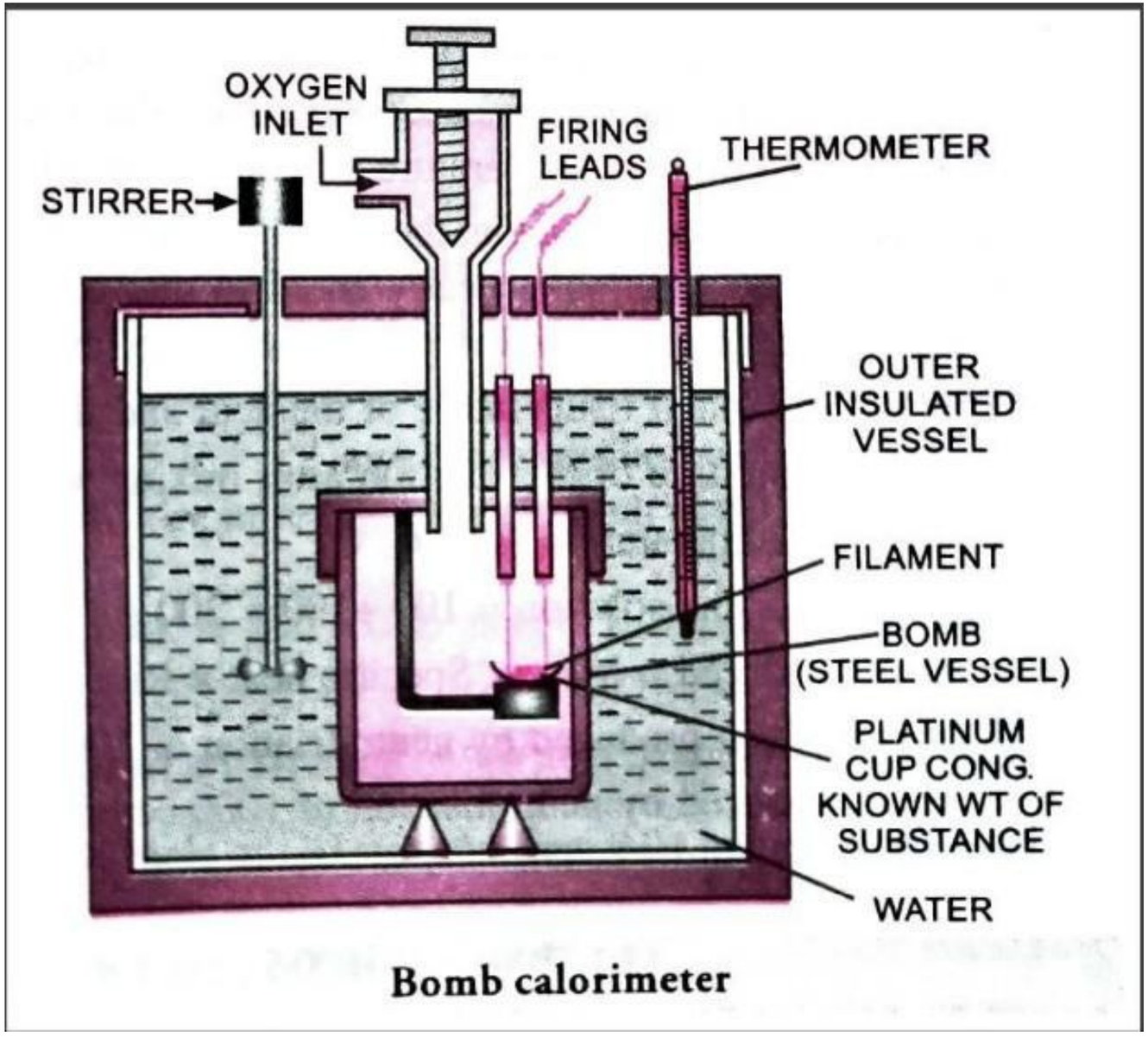
Vocabulary / Important Spellings –

- System
- Surrounding Entropy Bond
- Dissociation Internal Energy
- Thermochemical Equations, etc

Innovative Methods –

- Smart Class Lecture
- Method NCERT Book



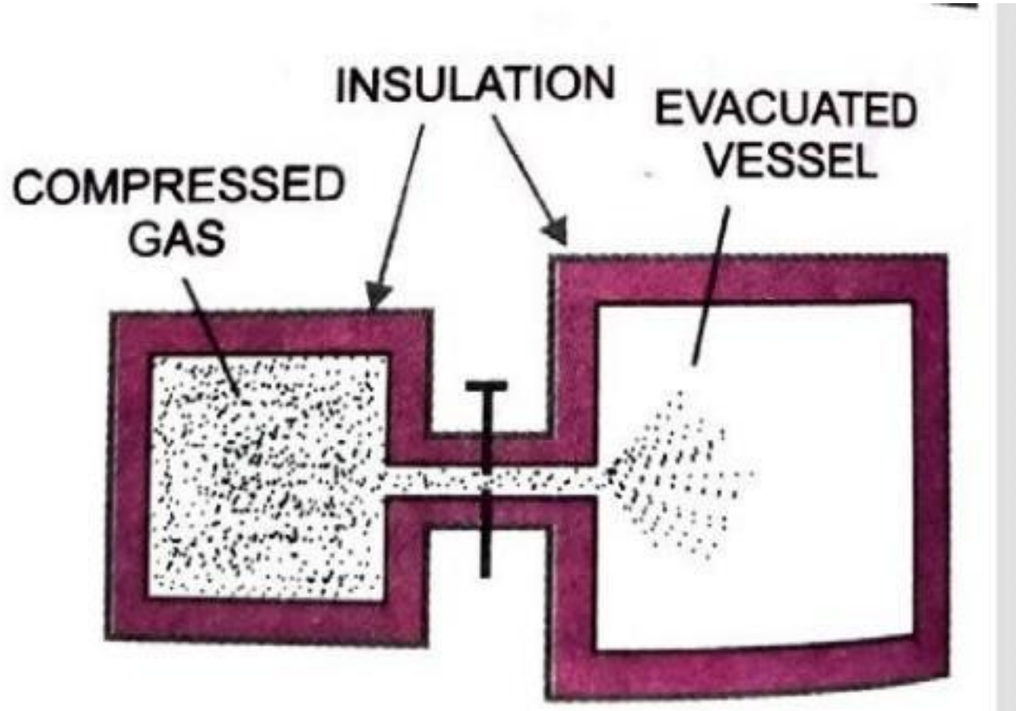


Bomb calorimeter

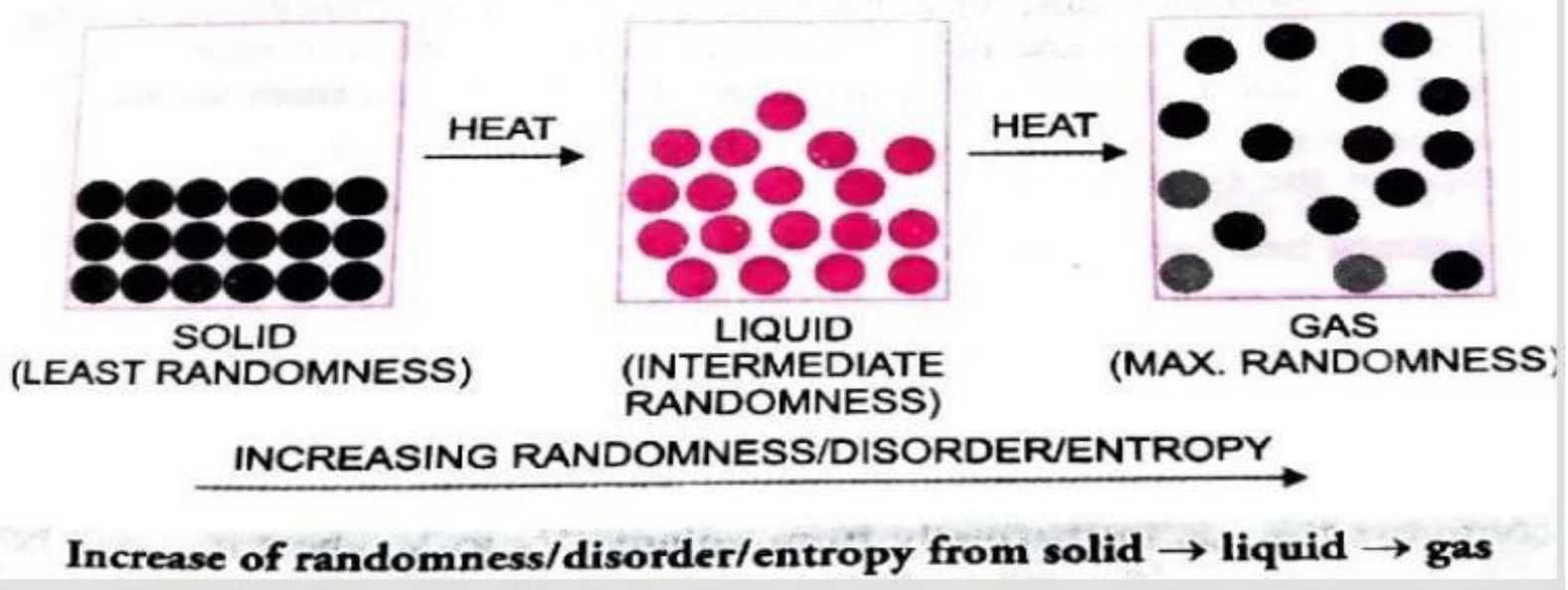
Procedure –

Student will be told about: -

- System, Surroundings, Intensive and Extensive Properties Internal Energy and Change in Internal Energy
- Enthalpy and change in Enthalpy Heat Capacity
- Different types of Enthalpies of Reactions Energies of Phase Changes
- Entropy – A State Function
- Spontaneity of a process
- Criteria of Spontaneity



Expansion of an ideal gas into vacuum– a spontaneous process with no change in energy



Increase of randomness/disorder/entropy from solid → liquid → gas

Students Participation –

Students will participate in doing: -

- Numerical Problems related to all topics covered in procedure from NCERT Book and Assignment
- Students will be able to solve Conceptual Questions

Recapitulation/ Assignment –

- Students will be able to tell definitions of all Thermodynamic Processes. Students will be able to recapitulate symbols of all Thermodynamic Processes
-

Integration with other domains –

The chapter Thermodynamics is integrated with: -

- Language
- Mathematics (To solve Numerical)
- Physics for topics like Work Done, Bomb calorimeter etc

Learning Outcomes –

Students will be able to solve: -

- Conceptual Reasoning Questions HOTS (High Order Thinking Questions) Derivations
- Numerical related to concepts above concepts

Co – Scholastic Activities –

With the knowledge of Chapter Thermodynamics, Students can perform activities like: -

- Experimental determination of Internal Energy of System with the help of Bomb Calorimeter
- Students can set up example of System and Surrounding
- Students can study change in Entropy of Reactions

Feedback And Remedial Teaching-

- Feedback from the students would be taken and such students would be identified whose preparation of the topics is not upto the mark. They would be explained the topic againand simple test from the concerned topic would be taken up.

Inclusive Practices And Full Participation With Discrimination-

To Develop respect for diversity, the lesson plan would include, early on material on human values such as respect for all persons, empathy, tolerance, human rights etc.

Chapter 7: Redox Reactions

Number Of periods :9

Month November

Objective –

The objective to study this chapter is that to inculcate the knowledge of Oxidation Number, Balancing of Redox Reactions, Electrochemical Cell. With the study of this chapter students will have knowledge of Electro Metallurgy, Electroplating and Refining of Metals.

Previous Knowledge Testing –

Students are expected to know about: -

- Redox Reactions
- Oxidation and Reduction in terms of Loss and Gain of Oxygen and Hydrogen
- Oxidising Agent and Reducing Agent etc

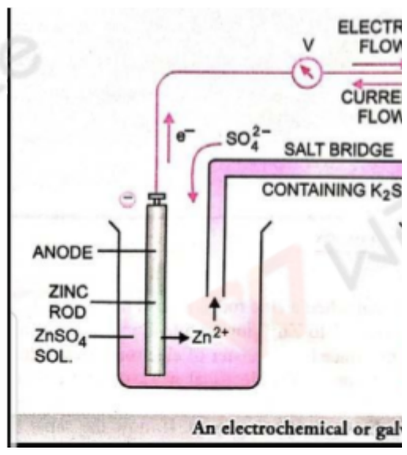
Vocabulary / Important Spellings –

- Oxidation
- Reduction
- Oxidising
- Reducing Agent,
- Electrochemical Cell,

- Potential Electrochemical Force, etc.

Innovative Methods / Resources –

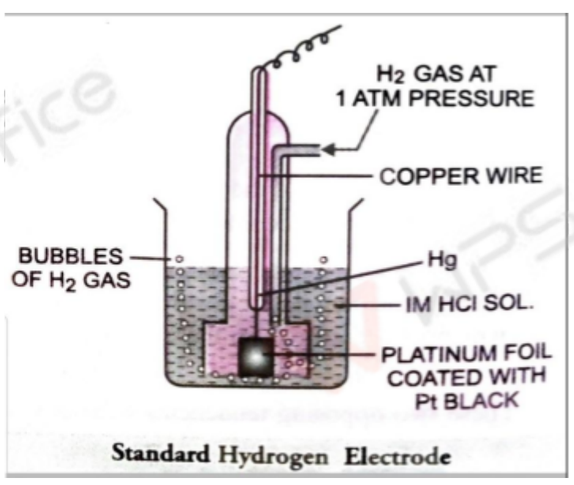
- Smart Board
- Lecture Method
- NCERT Book
- Reference Book.



Procedure –

Students will be told about: -

- Redox Reactions in terms of Electron Transfer Reactions
- Concept of Oxidation Number
- Types of Redox Reactions
- Balancing of Redox Reactions
- Balancing by Oxidation Number Method
- Balancing by Ion-Electron Method



Students Participation –

Students would be able to explain: -

- Electrochemical Cell, Redox Potential, Electromotive Force
- Balancing of Redox Reactions by Ion Electron Method
- Balancing by Oxidation Number Method
- Standard Electrode Potential
- Electrochemical Series

Recapitulation / Assignments –

- Students would be able to tell Oxidant, Reductant
- They would be able to tell about Galvanic Cell and their application
- Students would be given NCERT Questions and Assignments

Integration with Other Domains –

- The Electrochemistry (Branch of Chemistry) is integrated with Language (English)
- Mathematics for balancing the equations
- It is integrated with Physics (Study Movement of Current, Voltage, etc

Learning Outcomes –

After having knowledge of this Chapter, Students would be able to study: -

- Redox Reactions
- Electrochemical Cell
- Electrode Potential
- Types of Redox Reactions

Co- Scholastic Activities –

With the help of above Chapter, Students can study the process of: -

- Electrometallurgy
- Electro Refining of Metals
- Electroplating
- Redox Titration like KMnO4 (Potassium Permanganate) with Salt and Oxalic Acid

Feedback And Remedial Teaching: Feedback from the students will be taken and such students will be identified whose preparation of topic is not up to the mark. They would be explained topic again and simple test from concerned topic would be taken up.

Inclusive Practices and full participation without discrimination:

To develop respect for diversity the lesson plan would include material on human values such as respect for all persons, empathy, tolerance, human rights etc.

Sustainable Development Goals:

Students will attain the goal of descent work and economic growth.

Chapter- 6 : Equilibrium

MONTH= OCTOBER

No of teaching days=20

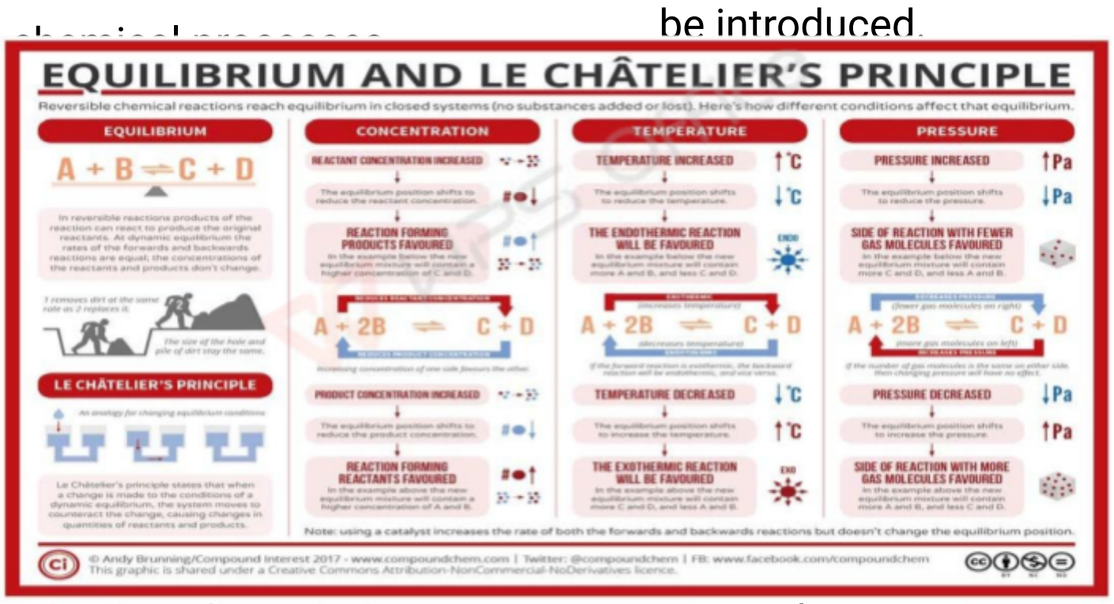
Objective:

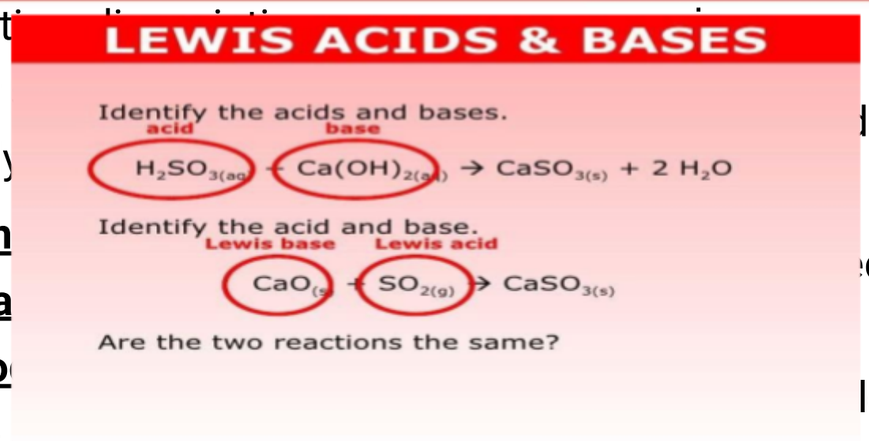
To introduce the concept of physical and chemical process, law of mass action, Le chatlier principle, ionic equilibrium, concept of pH, hydrolysis of salt, buffers, solubility of products, common ion effect.

pH testing:

Students will be asked

- What physical and



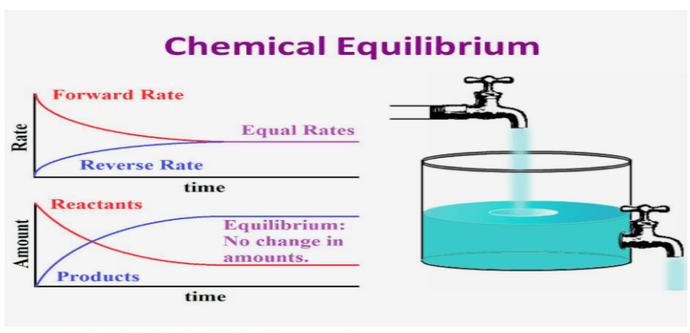


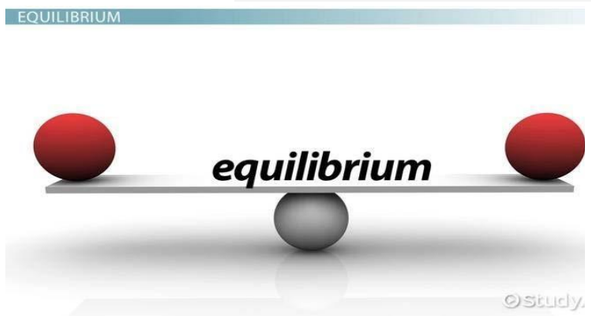
ionizat… buffer … hydroly… ds, bases

Explan… innova… metho… d and

Smart …from life processes like melting, vaporisation, salt solution, quiz, MCQ, practise problems, pH table, pH strips, peer assessment, student teacher interaction, tables of ionic compounds, log tables.

ACTIVITY





Procedure:

- After discussion of physical processes, sate of equilibrium in them will be discussed like
  Solid ⇝ ------ ☾ liquid
  Ice ⇝ ☾ water
  Liquid ⇝ ------ ☾ gas
  water ⇝ ☾ steam
  Gas ⇝ ☾ solid
- Law of mass action will be introduced.
- Salt hydrolysis will be exemplified by taking examples of various types of salts eg. NaCl, (NH4)2CO3, CH3COONa, (NH4)2SO4.
- Solubility product will be explained with practice of numerical
- Common ion effect and buffers will be explained by quoting various examples.

Participation of students:

Students will be able to quote various examples of state of equilibrium from their experiences of daily life, like evaporation in closed containers, freezing of water, melting of ice, bottle of cold drink. They will respond to

examples of weak and strong electrolyte and will test pH of given sample using pH paper. They will compare strength of acids and bases using values of ka and kb.

Recapitulation:

After doing this topic students will be told to:

Compare physical and chemical equilibrium

Apply law of equilibrium constant in var

Sta

Ch

Det

aci

Un

prc

buffer solution and apply them.

Solve numerical problems based on Kc, Ka, Kb, Ksp, pH etc.

integrated with mathematical skills.

Identification of acidic and basic nature will be integrated with act of colours.

	Acids	Bases
Litmus	Red	Blue
Phenolphthalein	Colourless	Dark pink
Methyl orange	Red	Orange

Resource:

Strong Acids/Bases

Strong Acids	Strong Bases
HCl	LiOH
HBr	NaOH
HI	KOH
HNO_3	RbOH
$HClO_4$	CsOH
H_2SO_4	$Ba(OH)_2$
	$Sr(OH)_2$

NCERT book for class XI

Reference book:

Chemistry for XII by pardeep publications

Youtube: Shiksha house, CBSE class 11 chemistry11 equilibrium chemistry.

Summary of Le Chatelier's P

Type of Effect or Change	Direction of
Addition of more reactants	Forward dire
Addition of more products	Backward di
Increase in temperature	Towards en
Decrease in temperature	Towards ex
Addition of Catalyst	No effect
Increase in Pressure	where the nc
Decrease in Pressure	where the nc

Learning outcome:

1. Knowledge

After accomplishing this topic students will learn to

- State physical and chemical equilibrium with examples
- Calculate Kc and write expression.
- State and apply Henrys law and LeChatlier principle.
- Appreciate theories of acids and bases.

Integration with other domains:

Measuring the vapour pressure and concentration will be integrated with skills of measurement in physics

Formula and expressions will be

- Learn concept of ionic equilibrium and pH.
- Solve numerical problems.

2. kills and competence

- Students will be able to apply knowledge of pH, acids and bases in food stuffs, items of daily use like toothpaste, shampoos, sauces, creams, eatables etc.
- They can apply their knowledge to get maximum yield in various processes by using values of Kc.
- Critical thinking will be developed, to apply the discussed concept in other cases.
- They will be able to apply established principles to justify and observation.
- Team work and collaboration skill will be inculcated.

Assignment:

NCERT exercise

Numerical problems for practise

To write expression for Kc in various reactions.

MCQ, SA, VSA

Definitions and statements of acids, bases, LeChatlier principle, Solubility product, buffer, strengths of acids and bases.

Feedback and Remedial Teaching

Students who would fallen back in studies. They would be given extra attention, mcq excercies would be given for practice

Inclusive practice and Full Participation :

The lesson plan would also include emphasis on global citizenship , inclusion, equality detailed knowledge of various culture

Sustainable Development Goals

With the knowledge of topic PH .The students can achieve the goal of better health and commu

Chapter - 8 : Organic Chemistry :

Some basic Principles

Month=November and December

No Of Teaching Period=11

OBJECTIVES:

- Define organic compounds
- Identify three types of carbon compounds
- Explain how carbon is used and applied in everyday life.

PREVIOUS KNOWLEDGE:

Students would be asked about the valency of carbon, allotropes of carbon, bonding in carbon compounds.

□

IMPORTANT SPELLINGS:

□

VOCABULARY:

IUPAC, isomerism, acyclic compounds, alicyclic compounds, aromatic compounds, stereoisomerism, nucleophilic and electrophiles.

IMPORTANT SPELLINGS:

Nucleophiles, electrophiles, substitution reaction, chromatography, kjeldah's method.

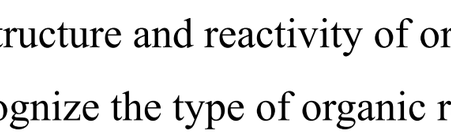
EXPLANATIONS WITH INNOVATING METHODS, LINKS USED:

1 Smart class
2 Show all activities inlab
3 With the help of model to show bonding in organic carboncompounds.

PROCEDURE:

I. Studentswouldunderstandreasonsfortetravalencyofcarbonand shapes of organiccompounds.
II. Classify the organiccompounds.
III.
IV.
V.
VI. Namethecompoundsaccording to IUPACsystemofnomenclature and also derive their structure from the given name.
VII. Understand the concept of organic reactionmechanism

V Explaintheinfluenceofelectronicdisplacementsonstructurean reactivity of organiccompou



Presentation of shifting of electron pair is given below :

(i) $=\overset{\curvearrowright}{Y}-\longleftrightarrow -Y=$ from π bond to adjacent bond position

(ii) $=\overset{\curvearrowright}{Y}-\longleftrightarrow -\ddot{Y}-$ from π bond to adjacent atom

(iii) $-\ddot{Y}\overset{\curvearrowright}{-}\longleftrightarrow -Y=$ from atom to adjacent bond position

STUDENTS PARTICIPATION:

Students would be able to name the organic compounds.

Students would be able to do numerical on topic quantitative analysis of carbon,hydrogen ,nitrogen,halogen and sulphur.

RECAPTULATION/ ASSIGNMENT

Students would be able to name organic compounds

Students will be able to explain the influence of electronic displacement

on structure and reactivity of organic compound

Recognize the type of organic recations.

NCERT in text and back excercise to begiven as assignment

IMPORTANT SPELLINGS:

ART INTEGRATION WITHOTHER DOMAINS:

Chapter Organic Chemistry is integrated with the following domain:

- □ English language
- □ Art integration(Diagrams of distillation, dumas method,

LEARNING OUTCOMES:

□ Students would be able to give IUPAC name of organic compounds.

They would be able to do numerical on quantitative analysis of elements like carbon, hydrogen and nitrogen.

RESOURCES:

NCERT and smart class and media like YouTube and google.

CO-SCHOLASTIC ACTIVITIES:

- Simple distillation will be shown in lab.
- Paper chromatography will be shown inlab.
- Students develop scientific attitude how to use the techniques.
- Students learn team work.

ASSESSMENT:

- Written tests will be taken.
- MCQ test will betaken.

Feedback and remedial teaching

Step by step instruction would be given to slow learning students. Such student would be take out of normal classroom and taught in a different environment. They would be provided

with routine assessment and practice activities

Inclusive practices and full participation without discrimination lesson plan is so design so as to promote education of children belongs to all minority

IMPORTANT
SPELLINGS:

Chapter 9 : Hydrocarbons

No of teaching periods=18

Month=December and January

OBJECTIVES:

- Students wouldbe able to recognize and write structures of isomers of alkane, alkenes and alkynes aromatic hydrocarbons
- Learns about variousmethods of preparation of hydrocarbons.
- Predict the directive influence of substituents in monosubstituted benzene ring.
- Learn carcinogenicity and toxicity.

PREVIOUS KNOWLEDGE:

- Students would be asked about the IUPAC names and organic compounds.
- Students wouldbe asked about alkanes,
- alkenes, alkynes and aromatic hydrocarbons.

VOCABULARY:

Isomerism, unsaturated hydrocarbons, Kolbe’s electrolytic

method, wurtz reaction, conformation of ethane, seahorse projection, markavnikov's rule.

Kolbe's electrolytic method, markanvnikov's rule, Friedel craft alkylation, friedal crafts acylation, carcinogenicity.

EXPLANATION WITH INNOVATIVE METHODS:

- Smart class
- Show all activities i n lab
- With the help of model (like ball and stick) to be shown confirmation of ethane.

PROCEDURE:

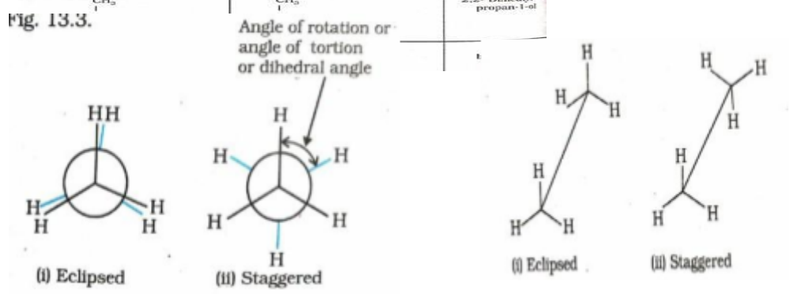
- Students will explain the name of hydrocarbons according to IUPAC system of nomenclature.
- Recognize and write structures of isomers of alkane, alkenes, alkynes and aromatic hydrocarbons
- Various methods of preparation of hydrocarbons.

□ Distinguish between alkanes, alkenes, alkynes and aromatic hydro on the basis of physical and chemical properties.

IMPORTANT SPELLINGS:

Structures of – C_5H_{11} group	Corresponding alcohols	Name of alcohol
(i) $CH_3-CH_2-CH_2-CH_2-CH_2-$	$CH_3-CH_2-CH_2-CH_2-CH_2-OH$	Pentan-1-ol
(ii) $CH_3-\underset{}{CH}(OH)-CH_2-CH_2-CH_3$	$CH_3-CH(OH)-CH_2-CH_2-CH_3$	Pentan-2-ol
(iii) $CH_3-CH_2-\underset{}{CH}(OH)-CH_2-CH_3$	$CH_3-CH_2-CH(OH)-CH_2-CH_3$	Pentan-3-ol
(iv) $CH_3-\underset{CH_3}{CH}-CH_2-CH_2-$	$CH_3-\underset{CH_3}{CH}-CH_2-CH_2-OH$	3-Methyl-butan-1-ol
(v) $CH_3-CH_2-\underset{CH_3}{CH}-CH_2-$	$CH_3-CH_2-\underset{CH_3}{CH}-CH_2-OH$	2-Methyl-butan-1-ol
(vi) $CH_3-\underset{CH_3}{\overset{CH_3}{C}}-CH_2-CH_3$	$CH_3-\underset{CH_3}{\overset{CH_3}{C}}(OH)-CH_2-CH_3$	2-Methyl-butan-2-ol
$\underset{CH_3}{\overset{CH_3}{}}$	$\underset{CH_3}{\overset{CH_3}{}}$	2,2- Dimethyl-propan-1-ol

Fig. 13.3.



□ Appreciate the role of hydrocarbons as sources of energy and for other industrial applications.

□ Structure of benzene.

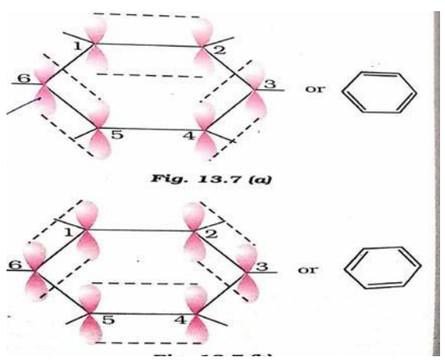
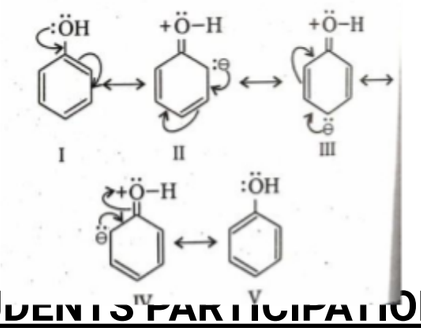
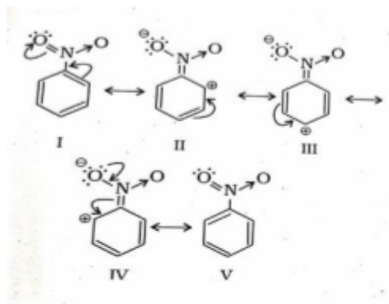


Fig. 13.7 (a)

□ Explain aromaticity and understand mechanism of electrophilic substitution reaction of benzene.

□ Predict the directive influence of substituent in mono substituted benzene ring.





STUDENTS PARTICIPATION:

□ Students would be able to name isomers of different hydrocarbons.

□ Students would be able to write methods of preparation of alkanes, alkanes and alkynes.

□ Students would be able to explain carcinogenicity and toxicity.

RECAPTULATION/ ASSIGNMENT

Students would able to give IUPAC name of isomers of alkanes.

□ Students would be able to explain the confirmation of ethane.

□ Would be able to explain influence of substituent in mono substituted benzene ring.

□ NCERT intext and back exercise is given as assignment.

ART INTEGRATION WITH OTHER DOMAINS:

- □ English language
- □ Art (drawing confirmation of ethane, structure of organic compounds)
- □ Math (write the balanced chemical equation)

LEARNING OUTCOMES:

- □ Students would be able to explain the conformation of ethane.
- □ Methods of preparation of alkanes, alkenes and alkynes.
- □ Direct influence of substituents in mono substituted benzene rings.

CO- SCHOLASTIC ACTIVITIES:

- □ Model of conformation of ethane will be made by students.
- □ Students develop scientific attitude how to use the techniques.
- □ Students learn team work.

ASSESSMENT:

- □ Written tests will be taken.
- □ MCQ test will be taken.

Feedback and Remedial teaching

The student will be given objective work sheet and Incorrect options will be discussed

Retest, Assignment, Practice question would be given for preparation

Sustainable Development Goals

by teaching this chapter we may proceed towards achieving the SDGof decent work and economic growth