



BHAVAN'S
BHAGWANDAS PUROHIT VIDYA MANDIR, NAGPUR
CURRICULUM PLAN (2023-24)

STD: XI SUBJECT : CHEMISTRY

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BHAVAN'S B.P. VIDYA MANDIR, NAGPUR
CURRICULUM PLAN 2023-24

SUBJECT :- CHEMISTRY

STD :- XI

MONTH	WEEKLY DATES	NO. OF PERIODS	TOPICS	SUB TOPICS	PERIODS REQUIRED	PRACTICALS/ACTIVITIES/SMART CLASS MODULES	ASSIGNMENTS / EVALUATION	LEARNING OUTCOMES/SDG/ SKILLS ASSESSED
April	3rd Week 17-21	5	1. SOME BASIC CONCEPTS OF CHEMISTRY	1.1 Importance and scope of chemistry 1.2 Nature of matter 1.5 Laws of chemical combination 1.6 Dalton's atomic theory Concepts of elements, atoms and molecules 1.7 Atomic and molecular masses	1 1 1 1 1	ICT: Laws of chemical combination Art integrated project: Picture book on importance of chemistry	Extra questions are discussed based on the concept taught	Students will be able to: Understand the properties of matter, explain various Laws of chemical Combination and .Daltons atomic theory. SDG: Importance of Green chemistry to save and conserve resources and achieving benefits that create a healthier environment. Skills Assessed: Creative skills, critical thinking skills, collaborative skills, communicative skills, literacy skills and life skills.

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April	4 th Week 24-29	6	1. SOME BASIC CONCEPTS OF CHEMISTRY	1.8 Mole concept and molar masses 1.9 Percentage composition Empirical and molecular formula Chemical reactions	3	ICT: Mole concept and molar masses Experiential learning activity: Measuring x mole of 5 substances and preparing molar solutions.	Extra questions are discussed based on the concept taught	Students will be able to: Understand Mole concept and determine empirical and molecular formulae of compounds. Develop measuring and observation skills. Perform the stoichiometric calculations Skills Assessed: Critical thinking skills, collaborative skills, communicative skills and life skills.
May	1st Week 2-4	3	1. SOME BASIC CONCEPTS OF CHEMISTRY	1.9 Percentage composition Empirical and molecular formula Chemical reactions (cont...)	3			
Jun	4th week 20-24	5	1. SOME BASIC CONCEPTS OF CHEMISTRY	1.10 Stoichiometry and calculations based on stoichiometry Exercise	2			
Jun	5th week 26-30	4	1. SOME BASIC CONCEPTS OF CHEMISTRY	Revision	4	Practicals: Crystallisation		
July	1st & 2nd week 1-7	7	2. STRUCTURE OF ATOM	2.1 Discovery of sub atomic particles 2.2 Atomic model 2.3 Developments leading to Bohr's atomic model 2.4 Bohr's model of Hydrogen atom	1 2 3 1	ICT: Bohr's atomic model Educomp Module: Dual nature of matter, Practicals: Melting point (2 expts)	Extra questions are discussed based on the concept taught	They will understand the importance of Bohr's atomic model Understand nature of electromagnetic radiation and Planck's quantum theory.

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Jul	3rd week 10-15	7	2. STRUCTURE OF ATOM	2.4 Bohr's model of Hydrogen atom (contd....). 2.5 Towards quantum mechanical model of the atom 2.6 Quantum mechanical model of atom	2 2 3	ICT: Shapes of s, p and d orbitals Experiential learning activity: Creating shapes of orbital using balloons, clay or any other material. Gamification: Musical Chair Activity to explain the filling of s & p orbitals using Pauli Exclusion Principle and Hund's rule.	Assignment sheet for chap 2 is discussed.	State de Broglie relation and Heisenberg uncertainty principle. Define atomic orbitals in terms of quantum numbers. Skills Assessed: Critical thinking skills, collaborative skills, communicative skills and life skills.

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Jul	5th week 24-28 and 31	7	3.CLASSIFICAT ION OF ELEMENTS AND PERIODICITY IN PROPERTIES	3.1 Why do we Need to Classify Elements? 3.2 Genesis of Periodic Classification 3.3 Modern Periodic Law and the present form of the periodic table 3.4 Nomenclature of elements with Atomic Numbers > 100 3.5 Electronic configurations of elements and the Periodic table. 3.6 Electronic Configurations and types of elements: s-, p-, d-, f- Blocks	1 1 1 2	Practicals: Preparation of standard solution of oxalic acid Experiential learning activity: 1. Pnemonics in learning Periodic Table 2. Multidisciplinary periodic table song.	Extra questions are discussed based on the concept taught	Students will understand the periodic law, significance of atomic number and electronic configuration as the basis for periodic classification. Classify elements into s,p,d,f blocks; Skills Assessed: Creative skills, collabrative skills, communicative skills and life skills
Aug	1st week 1-5	6	3.CLASSIFICAT ION OF ELEMENTS AND PERIODICITY IN PROPERTIES	3.7 Periodic Trends in Properties of elements Exercise	5 1	Experiential learning activity: Human model of an atom to understand the different trends.		Recognise periodic trends; compare reactivity of elements; explain relationship between ionisation enthalpy and metallic character and understand and apply electronegativity and electron gain enthalpy Skills Assessed: Creative skills, collabrative skills, communicative skills and life skills

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Aug	2nd week 7-12	7	3. CLASSIFICATION OF ELEMENTS AND PERIODICITY PROPERTIES IN 4. CHEMICAL BONDING AND MOLECULAR STRUCTURE	Exercise (Contd....) 4.1 Kossel – Lewis Approach to Chemical Bonding 4.2 Ionic or Electrovalent bond 4.3 Bond Parameters	2 3 1 1			Differentiate between ionic and covalent bonds, draw Lewis structure for various covalent molecules. Apply bond parameters in understanding dissociation enthalpy and shapes of molecules
Aug	3rd week 14-19	5	4. CHEMICAL BONDING AND MOLECULAR STRUCTURE	4.4 The Valence Shell Electron Pair Repulsion (VSEPR) Theory 4.5 Valence Bond Theory	3 2	ICT: Resonance Practicals: Volumetric analysis (NaOH vs oxalic acid) Experiential learning activity: 1. Model Making Ionic bond and Covalent bond 2. VSEPR Models	Extra questions are discussed based on the concept taught PT 1(14.8.2023) CH1 SOME BASIC CONCEPTS OF CHEMISTRY(13M) CH2. STRUCTURE OF ATOM (TILL PHOTO ELECTRIC EFFECT)(12M)	Describe VSEPR theory and predict geometry of molecules. Explain VBT and predict directional properties of covalent bonds

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Aug	4th week 21-26	7	4. CHEMICAL BONDING AND MOLECULAR STRUCTURE	4.6 Hybridisation 4.7 Molecular Orbital Theory 4.8 Bonding in Some Homonuclear Diatomic Molecules	4 1 2	ICT: Geometry of molecules Hybridisation, Experiential learning activity: 1. Toy based paedogy – Board games to understand MOT	Extra questions are discussed based on the concept taught Assignment sheet for chap 4 is discussed	Predict hybridisation and draw shapes of simple covalent molecules. Describe MOT homonuclear diatomic molecules SDG: Unity is strength
Aug	5th week 28-31	3	4. CHEMICAL BONDING AND MOLECULAR STRUCTURE	4.8 Bonding in Some Homonuclear Diatomic Molecules (Contd....) 4.9 Hydrogen Bonding	2 1	Practicals: Volumetric analysis (HCl vs Na ₂ CO ₃) ICT: Molecular orbital theory TOY BASED PEDAGOGY: Board game to understand MOT	Extra questions are discussed based on the concept taught Assignment sheet for chap 4 is discussed	Apply the concept of hydrogen bonding in understanding melting point, boiling point and solubility of substances.
Sept	1st week 1-2	2	4. CHEMICAL BONDING AND MOLECULAR STRUCTURE	Exercise	2			
Sept	2nd week 4-8	5	8. ORGANIC CHEMISTRY - SOME BASIC PRINCIPLES & TECHNIQUES	8.1 General introduction 8.2 Tetravalence of Carbon: Shapes of Organic compounds 8.3 Structural Representations of Organic Compounds 8.4 Classification of Organic compounds	1 1 1	Experiential learning activity: 1. 1. Flash card Activity to learn IUPAC naming		They will be able to name(IUPAC) and write structures of organic compounds

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				8.5 Nomenclature of Organic compounds	2			
Sept	3rd week 11-16	6	8. ORGANIC CHEMISTRY - SOME BASIC PRINCIPLES & TECHNIQUES	8.5 Nomenclature of Organic compounds (Contd...) 8.6 Isomerism 8.7 Fundamental concepts in Organic Reaction Mechanism	2 2 2	Practicals: Salt analysis Groups 0 ICT: quantitative analysis of C, N, O, S, P and halogen.	Numericals based on quantitative analysis will be discussed. Extra questions are discussed based on the concept taught	SDG: Practices that minimize the micro pollutants – Identification of presence of pollutants- Methods of separating them.
Sept	4th week 18-23	4	8. ORGANIC CHEMISTRY - SOME BASIC PRINCIPLES & TECHNIQUES	8.7 Fundamental concepts in Organic Reaction Mechanism (Contd...)	4	Practicals: Salt analysis Groups 1 Educomp Modules : Electronic displacement in covalent bonds.	Application based question on inductive effect.	Students will be able to understand the concept of organic reaction mechanism and explain the influence of electronic displacements.
Sept	5th week 25-26	2	Revision					

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HALF YEARLY EXAMINATION : 30/09/2023 TO 16/10/2023 PORTION: CH 1: SOME BASIC CONCEPTS OF CHEMISTRY (15M) CH 2: STRUCTURE OF ATOM (20M) CH 3: CLASSIFICATION OF ELEMENTS AND PERIODICITY IN PROPERTIES (15M) CH 4: CHEMICAL BONDING AND MOLECULAR STRUCTURE (20M)								
Oct	3rd week 17-21	4	8. ORGANIC CHEMISTRY - SOME BASIC PRINCIPLES & TECHNIQUES	8.8 Methods of Purification of Organic compounds	4	Practicals: Salt analysis Groups 3	Extra questions on concepts of alkanes are discussed.	Understand and apply the techniques of purification of organic compounds.
Oct	4 th week 25-27	3	8. ORGANIC CHEMISTRY - SOME BASIC PRINCIPLES & TECHNIQUES	8.9 Qualitative analysis of Organic compounds 8.10 Quantitative analysis	1 2	ICT: Purification methods Experiential learning activity: 1. Hands-on practicals to study qualitative analysis		Write reactions involved in qualitative analysis & understand the principles involved in quantitative estimation
Nov	1 st week 1-4	4	9. HYDROCARBONS	9.1 Classification	4	Practicals: Salt analysis Groups 3	Practice questions based on chemical properties are discussed.	Students will be able to explain the mechanism of the addition products of alkenes & alkynes.

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Nov	2nd week 6-9	5	9. HYDROCARBONS	9.2 Alkanes	5	Experiential learning activity: 1. Ball and stick model	PT2 (06.11.2023) CH4. CHEMICAL BONDING(12M) CH8: SOME -BASIC CONCEPTS OF CHEMISTRY INCLUDING HYPERCONJUGATION)(13M)	Distinguish between alkanes & alkenes on the basis of their properties Apply their knowledge of chemical properties in conversions. Gain knowledge about the methods of preparation & properties of alkanes and alkenes.

DIWALI VACATIONS : 10/11/2023 TO 22/11/2023

Nov	4th week 23-25	3	9. HYDROCARBONS	9.3 Alkenes	3	ICT: Geometrical isomerism Practicals: Salt analysis Group 4	Extra questions are discussed based on the concept taught	
Nov	5th week 28-30	3	9. HYDROCARBONS	9.4 Alkynes	2	ICT: Structure of triple bond		
Dec	1 st week & 2 nd week	8	9. HYDROCARBONS	9.5 Aromatic Hydrocarbon	6	Practicals: Salt analysis	Extra questions are discussed	Gain knowledge on preparation & properties of

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	1-8		ONS	9.6 Carcinogenicity and Toxicity Exercise	1	Groups 4 ICT: Resonance in benzene ICT: Directive influence of functional group of monosubstituted benzene Experiential learning activity: 1. Seminar on system and surrounding	based on the concept taught PT2.	aromatic compounds. Students will be able to Predict the directive influence of the substituents in mono substituted benzene ring SDG: Different methods to reduce carbon foot prints.
Dec	3 rd week 11-16	7	5.THERMODYNA MICS	5.1 Thermodynamics terms 5.2 Applications 5.3 Measurement of ΔU & ΔH : Calorimetry	2 3 2	Experiential learning activity: 1. Bomb calorimeter for measurement of ΔU & ΔH	Extra questions are discussed based on the concept taught	Students will be able to define heat capacity and specific heat capacity. State and apply Hess's law of constant heat summation.
Dec	4 th week 18-23	7	5.THERMODYNA MICS	5.4 Enthalpy change, $\Delta_r H$ of a reaction – Reaction Enthalpy 5.5 Enthalpies for different types reactions	4 2 2			Students will be able to calculate enthalpy changes for various types of reactions. Explain entropy and apply it to predict the spontaneity

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Dec	5 th week 26-30	6	5.THERMODYNAMICS	5.6 Spontaneity 5.7 Gibbs Energy change & equilibrium Exercise	2 3 1			of reaction. Will be able to relate Gibb's energy and spontaneity and also equilibrium constant State II and III law of thermodynamics. State the law of equilibrium and understand its dynamic nature in physical and chemical processes SDG: Address challenges of minimising energy.
Jan	1 st week 1-6	7	6 EQUILIBRIUM	6.1 Equilibrium in physical processes. 6.2 Equilibrium in chemical processes- Dynamic equilibrium 6.3 Law of Chemical equilibrium & Equilibrium constant.	2 3 2	Practicals: Salt analysis Groups 5	Application based questions will be given as assignment.	
Jan	2nd week 8-13	7	6.EQUILIBRIUM	6.4 Homogeneous Equilibria 6.5 Heterogeneous Equilibria 6.6 Applications Equilibrium constants. 6.7 Relationship between Equilibrium constant K, Reaction quotient Q & Gibbs Energy G 6.8 Factors affecting Equilibria	2 1 3 1	Experiential learning activity: 1. Hand-on activity – formation of Fe(CNS) ₂	PT3.(8.1.2023) CH5.THERMODYNAMICS INCLUDING 5.2(10M) CH9.HYDROCARBONS(15M)	


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Jan	3rd week 16-20	6	6.EQUILIBRIUM	6.9 Ionic Equilibrium in solutions. 6.10 Acids, Bases & Salts.	3	Practicals: pH experiments of acids & bases of different strengths. Experiential learning activity: 1. Determination of pH of some solutions obtained from fruit juices	Assignment sheet for chap 7 is discussed	Explain various factors that affect equilibrium Apply the formula in solving numericals. Classify acids and bases as weak or strong in terms of ionisation constant set and its application.
Jan	4th week 22-25	4	6.EQUILIBRIUM	6.11 Ionisation of Acids & bases. 6.12 Buffer solutions 6.13 Solubility Equilibria of sparingly soluble salts.	2 1 1	Experiential learning activity: 1. Comparative study of buffer action of water and milk by adding base and acids		SDG: Enable students to get insight of economic factors related with increase in production.
Jan	5 th week 29-31	3	6.EQUILIBRIUM	6.13 Solubility Equilibria of sparingly soluble salts. (Contd....) Exercise	1 2	Practicals: Change in pH of weak acid & weak base on addition of common ion Experiential learning activity 1. Activity to study the shift in equilibrium between $[\text{Co}(\text{H}_2\text{O})_6]^{3+}$ and Cl^- ions by	Extra questions are discussed on the concept taught.	Describe pH scale. Apply the knowledge of buffer solutions in practicals. Calculate solubility product constant and apply in qualitative analysis of salt. Explain common ion effect.

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Feb	1 st week 1-3	3	7.Redox Reactions	7.1 Classical Idea of Redox reactions- Oxidation & Reduction reactions.	3	Practicals: Detection of elements changing their concentration	Exercise questions will be discussed Assignment sheet for chap 9 is discussed	Students will be able to understand physical and chemical properties of water.
Feb	2 nd week 5-9	4	7.Redox Reactions	7.2 Redox reactions in terms of Electron transfer reactions 7.3 Oxidation Number.	3 1			
Feb	3 rd week 12-17	7	7.Redox Reactions	7.3 Oxidation Number (Contd) 7.4 Redox reactions & Electrode processes	1 6			
Feb	4 th week 20-24	5	7.Redox Reactions	7.4 Redox reactions & Electrode processes (Contd.....) Exercise	2 3	ICT: Properties of group 1 & 2.	Assignment sheet for chap 7 is discussed	


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Feb	5 th week 26-29	4	REVISION		4			


Note: The topics which require more periods than those allotted will be covered by taking extra classes.


ANNUAL EXAMINATION 02-03-2024 TO 16-03-2024


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Portion for Examinations (2023-24) – XI Chemistry

PERIODIC TEST I : 14/08/2023

Chapter-1: Some Basic concepts of Chemistry (13M)

Chapter-2: Structure of Atom (till Photoelectric effect) (12M)

PERIODIC TEST II : 06/11/2023

Chapter-4: Chemical bonding (12M)

Chapter-8: Some basic concepts of Chemistry including Hyperconjugation (13M)

PERIODIC TEST III : 08/01/2024

Chapter-9: Hydrocarbons (15M)

Chapter-5: Thermodynamics including 5.2 (10M)

HALF YEARLY EXAM : 30/09/2023 To 16/10/2023

Chapter-1: Some Basic concepts of Chemistry (15M)

Chapter-2: Structure of Atom (20M)

Chapter-3: Classification of Elements (15M)

Chapter -4: Chemical bonding & molecular structure(20M)

PRACTICAL (HALF YEARLY)

1. Determination of Melting Point of the given organic sample.
2. Determination of Boiling Point of the given organic sample.
3. Preparation of crystals of Alum.
4. Volumetric Analysis- a) Determination of the strength of NaOH by titrating against standard oxalic acid.
b) Determination of the strength of HCl by titrating against standard Sodium carbonate solution.
5. Salt Analysis –Groups 0,1,2 and all acid radicals.

ANNUAL PROMOTION EXAMINATION: 02/03/2024 TO 16/03/2024



BHAVANS B. P. VIDYA MANDIR

NAGPUR

CHEMISTRY STD: XI (2023-2024)

PRACTICAL SYLLABUS

1. Determination of melting point of an organic compound.
 2. Determination of boiling point of an organic compound.
 3. Crystallization of impure sample of Alum
 4. Study the pH change by common-ion in case of weak acids and weak bases.
 5. Study the shift in equilibrium between ferric ions and thiocyanate ions by increasing/decreasing the concentration of either of the ions.
 6. Using a chemical balance preparation of standard solution of Oxalic acid.
 7. Determination of strength of a given solution of Sodium Hydroxide by titrating it against standard solution of Oxalic acid.
 8. Determination of strength of a given solution of Hydrochloric acid by titrating it against standard Sodium Carbonate solution.
 9. Qualitative Analysis
 - (a) Determination of one anion and one cation in a given salt
- Cations- Pb^{2+} , Cu^{2+} , Al^{3+} , Fe^{3+} , Mn^{2+} , Ni^{2+} , Zn^{2+} , Ca^{2+} , Ba^{2+} , Mg^{2+} , NH_4^+
Anions – CO_3^{2-} , Cl^- , NO_3^- , SO_4^{2-}
- (Note: Insoluble salts excluded)



Art-Integrated Activity

Bhavan's B.P. Vidya Mandir, Nagpur

Art - Integrated Activity/Project/Subject Enrichment (2023-2024)

Subject: Chemistry Class: XI
Topic: Some Basic Concepts of Chemistry
Sub-topic: Picture Book on applications of Chemistry in various fields.
Nature of Task: Group Activity.

Task: Picture book making.

Skills Assessed: Learning skill - Collaborative work, Creativity, Critical thinking
Literacy skill - Information, Media, Technology Lifeskill - Flexibility, Initiative.

Learning Objectives: Students will be able to understand the Importance of Chemistry in development & growth of Nation. They will appreciate the Importance & scope of Chemistry in diverse areas such as fertilizers, polymers, metal alloys, drugs, etc.

Procedure: 1) Teacher will explain & guide the students to make picture book on applications of Chemistry in various fields.
2) Teacher will further instruct to select any few fields where principles of Chemistry are applicable like polymers, drugs, alloys, cosmetics, food technology, etc
3) Students can gather information from various sources, collect pictures & present the content in a creative manner in the picture book.



Assessment Criteria: ① Content

② Concept Clarity

③ Creativity

④ Presentation

⑤ Team work.

Duration of the Task: One Week.

Follow up / Feedback: Teacher will ask questions & guide the students in case of any doubt.

Assessment Rubric: ① Content - 01

② Concept Clarity - 01

③ Creativity - 01

④ Presentation - 01

⑤ Team work - 01

Total - 05

Subject Coordinator's: Name and Signature

CL : Keishna Kannan

ASHTI: A-sushcela

KORADI: Ab

SKN : Sandhya Dani

TMN : Nidhi Agnihotri

CHB: _____

AMODA: Sneha R. Hampikole

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