

**COMMECS COLLEGE****Macro Plan (2025-26)****Subject: Chemistry****Class: XII (Pre-Medical & Pre-Engineering)****TERM –I**

<b>Wee k No .</b>	<b>Start Date</b>	<b>End Date</b>	<b>No. of Teaching days</b>	<b>No. Of Units</b>	<b>Topic/Chapter</b>	<b>Contents</b>	<b>Objectives</b> By the end of the unit S.W.A.T.:
1	Fri, Aug 01	Fri, Aug 08	06	01  06	<b>Introduction</b>  <b>CHAPTER: 03 Organic Compounds</b>	<b>Introduction, Syllabus and Paper Pattern</b>  1. Sources of organic compound 2. Coal as source of organic compound 3.Characteristics of organic compound 4. uses of organic compound 5. New allotrope of Carbon 6. Functional groups and homologous series	<b>*Discuss syllabus and paper pattern</b>  1. Write about different sources of organic compounds( fossil remains, coal, petroleum, natural gas, plants , animals) 2. Differentiate between Partial and total synthesis 3. What are the Products of biotechnology 4. Destructive distillation of coal 5. Reformation of petroleum 6. Characteristics and uses of organic compound 7. Write about Bucky ball 8. Understand about different functional groups responsible for different characteristics of organic compound and homologous series.
2	Mon, Aug 11	Fri, Aug 15	03	04	<b>CHAPTER 04 Nomenclature of organic compound</b>	1. Introduction of Hydrocarbon and derivatives 2. History of Nomenclature 3.IUPAC system 4. Nomenclature of: i. Alkanes ii. Alkenes	Give introduction of hydrocarbons 1. Naming different hydrocarbons 2. Name different organic compound 3. Identify different organic compounds 4. Name different organic compounds of alkane and alkene

3	Mon, Aug 18	Sat, Aug 23	05	06	<b>CHAPTER 04 Nomenclature of organic compound</b>	iii. Alkynes iv. Alkyl Halides v. Amines vi. Alcohol vii. Phenol viii. Ether	1. Name different organic compounds of alkynes, alkyl Halide, Amines, Alcohol, Phenol and Ether
4	Mon, Aug 25 <b>Quiz Week</b>	Sat, Aug 30 <b>Quiz Week</b>	05	06	<b>CHAPTER 04 Nomenclature of organic compound</b>	ix. Aldehyde and Ketone x. Carboxylic acid xi. Ester xii. Amide xiii. Acyl Halides	1. Name different organic compounds of Aldehyde, Ketone, Carboxylic acid, Ester Amide and Acyl Halides
5	Mon, Sep 1	Fri, Sep 05	04	05	<b>CHAPTER 5 Introduction to Hydrocarbons</b>	1. Types of Hydrocarbons 2. Alkanes and cycloalkanes 3. Radical substitution reaction	1. Write about types of Hydrocarbons 2. Write equations of the reactions related to saturated hydrocarbons 3. Explain reaction Mechanism of substitution in alkanes.
6	Mon, Sep 08	Sat, Sep13	05	06	<b>CHAPTER 5 Introduction to Hydrocarbons</b>	4. Alkenes i. Structure ii. Preparation of Alkenes iii. Reactions of Alkenes 5. Alkynes i. Structure ii. Preparation iii. Physical properties	1. Make hybrid orbital model of alkene 2. Methods of preparation of alkenes by *dehydration of alcohols and *dehydrohalogenation of Alkyl Halides 3. Write addition, Polymeric and Oxidation reactions of Alkenes 4. Write about distinguishing test between saturated and unsaturated hydrocarbon 5. Make hybrid orbital model of alkyne.
7	Mon, Sep15	Fri, Sep 19	04	05	<b>CHAPTER 5 Introduction to Hydrocarbons</b>	iv. Preparation of Alkynes by Elimination Reaction v. Acidity of terminal Alkynes vi. Addition reaction of Alkynes	1. Methods of preparation of alkynes by Elimination reactions 2. Write about distinguishing test between *Alkanes and Alkynes 3. Write addition, Polymeric, acidic and Oxidation reactions of Alkynes

08	Mon, Sep 22 <b>Quiz Week</b>	Sat, Sep 27 <b>Quiz Week</b>	05	06	<b>CHAPTER 5 Introduction to Hydrocarbons</b>	6. Isomerism 7. Benzene and its derivatives i. Physical Properties ii. Structural and Molecular Orbital Aspects	2. Define and explain Structural Isomerism, Chiral Centre, Optical Activity, Optical Isomerism, Stereoisomerism 3. Preparation of benzene Derivatives of benzene 4. Explain the Physical Properties of Benzene 5. Explain the molecular orbital structure of Benzene
9	Mon, Sep 29	Fri, Oct 03	05	06	<b>CHAPTER 5 Introduction to Hydrocarbons</b>  <b>CHAPTER 1 Chemistry of Representative Elements</b>	iii. Addition Reaction iv. Electrophilic Substitution Reaction v. Substituent effect  1. Introduction and General Group trends of Representative Elements	1. Write the Addition reactions of Benzene 2. Explain the Electrophilic Substitution Reactions of benzene ( Nitration, Sulfonation, Halogenation, Friedel-Craft Alkylation and Acylation) 3. Substituent Effects 4. Preparation of Poly substituted Benzene  1. Understand general trends of different physical properties
10	Mon, Sep 06	Sat, Oct 11	05	06	<b>CHAPTER 1 Chemistry of Representative Elements</b>	2. Reactions of S-Block Elements with Oxygen, Water, Halogens, Nitrogen, Hydrogen, <i>Alcohol</i> , Acids 3. Reactions of P-Block Elements 4. Flame Test	1. Write chemical equations of reactions of s- block elements 2. Write chemical equations of reactions of p- block elements.( with Oxygen, Water, Halogens, Nitrogen, Hydrogen) 3. Know why different metals show different colors?

11	Mon, Oct 13	Fri, Oct 17	05	06	<p><b>CHAPTER 1</b> <b>Chemistry of Representative Elements</b></p> <p><b>CHAPTER:2</b> <b>Chemistry of Outer Transition (d block) Elements</b></p>	<p>5. Chemistry of Important Compounds of S-Block Elements i. Sodium Hydroxide ii. Bleaching Powder</p> <p>6. Chemistry of Sulphuric Acid</p> <p>7. Chemical Behaviour of Halogens</p> <p>8. Diagonal relationship of representative elements.</p> <p>1. General features: i. Electronic structures ii. Binding energy iii. Variable oxidation state iv. Catalytic activity</p>	<p>1. Explain Castner Kellner cell ,physical and chemical properties of NaOH</p> <p>2. Understand what is bleaching action, physical and chemical properties of bleaching Powder</p> <p>3. Write about contact process , physical and chemical properties of sulphuric acid</p> <p>4. Write about Bond Enthalpies in Halogens</p> <p>5. Write reason about Strength of Halogens as oxidizing Agents: <math>F &gt; Cl &gt; Br &gt; I</math></p> <p>6. Explain the Acidity of Hydrogen Halides</p> <p>7. Explain about reducing properties of Halide ions and their relative Strength</p> <p>8. Explain about diagonal relationship in representative elements and reasons behind it.</p> <p>1. Define Occurrence of the transition elements in Pakistan and General characteristics</p>
12	Mon, Oct 20	Sat, Oct 25	05	06	<p><b>CHAPTER:2</b> <b>Chemistry of Outer Transition (d block) Elements</b></p>	<p>v. Magnetic behavior vi. Alloy formation vii. Colour of complexes</p> <p>2. Nomenclature of co-ordination compounds</p>	<p>1. Define General characteristics of the transition elements.</p> <p>2. Name cationic complexes</p> <p>3. Name anionic and neutral complexes</p>
13	Mon, Oct 27 <b>Quiz Week</b>	Fri, Oct 31 <b>Quiz Week</b>	05	06	<p><b>CHAPTER:2</b> <b>Chemistry of Outer Transition (d block) Elements</b></p>	<p>1. Chemistry of some important transition elements i. Chromium ii. Manganese iii. Iron iv. Copper</p>	<p>4. Chemistry of potassium dichromate</p> <p>5. Chemistry of potassium permanganate</p> <p>6. Chemistry of steel, its types and application</p> <p>7. Metallurgy of Copper</p>

14	Mon, Nov 03	Sat, Nov 08	05	06	<b>CHAPTER:6 Alkyl Halides and Amines</b>	<p>1. Introduction of Alkyl Halide</p> <ol style="list-style-type: none"> <li>Structure</li> <li>Physical properties</li> <li>Preparations of Alkyl Halide</li> <li>Reactivity</li> <li>Elimination Reaction</li> </ol>	<p>1- Explanation of Alkyl halides, structure and their classification.</p> <p>2- Write the Properties of Alkyl Halides.</p> <ol style="list-style-type: none"> <li>Write the Preparation of Alkyl Halide</li> <li>Reaction of Alcohols with Hydrogen Halides</li> <li>Reaction of Alcohols with other Halogenating Agents ( <math>\text{SOCl}_2</math>, <math>\text{PX}_3</math> )</li> <li>Substitution reaction with <math>\text{SN}^1</math> and <math>\text{SN}^2</math> Mechanism using different examples.</li> <li>Elimination reaction with <math>\text{E}_1</math> and <math>\text{E}_2</math> Mechanism with different examples given in book.</li> </ol>
15	Mon, Nov 10	Fri, Nov 14	05	06	<b>CHAPTER:6 Alkyl Halides and Amines</b>	<p>Grignard's Reagents (Organometallic Compounds)</p> <ol style="list-style-type: none"> <li>Preparation of Grignard's Reagents</li> <li>Reactivity of Grignard's Reagents</li> </ol>	<ol style="list-style-type: none"> <li>Definition of Organo metallic Compounds</li> <li>Write the Preparation of Grignard's reagent</li> </ol>
16	Mon, Nov 17	Sat, Nov 22	05	06	<p><b>CHAPTER:6 Alkyl Halides and Amines</b></p> <p><b>CHAPTER:7 Alcohols, Phenols and Ethers</b></p>	<ol style="list-style-type: none"> <li>Reactivity of Grignard's Reagents</li> </ol> <p>2. Amines</p> <ol style="list-style-type: none"> <li>Physical Properties</li> <li>Structure</li> <li>Basicity</li> </ol> <p>1. Reactivity and reactions of Alcohols</p> <p>7. Phenols Structure, Physical properties, Acidity</p>	<ol style="list-style-type: none"> <li>Explain the reactivity of Grignard's reagent</li> <li>Write the Reactions of Grignard's reagent <ul style="list-style-type: none"> <li>*Reaction with Water</li> <li>*With Ester</li> <li>*With <math>\text{CO}_2</math></li> <li>*With Amines</li> </ul> </li> <li>Define Amine and its physical Properties, structures, basicity of Amine and reactions for the preparation of Amine <ul style="list-style-type: none"> <li>* By Alkylation of Ammonia</li> <li>*By Reduction of Nitrogen Containing Functional Group</li> </ul> </li> <li>Write the Reactions of Amine <ul style="list-style-type: none"> <li>*Alkylation of Amine by Alkyl Halide</li> <li>*Reaction of Amine with Aldehyde and Ketones</li> <li>*Preparation of Amide and Diazonium Salts</li> </ul> </li> </ol> <ol style="list-style-type: none"> <li>Write the reactions of Alcohols.</li> <li>Define and explain the structure, Properties and Acidity of Phenols</li> </ol>

17	Mon, Nov 24 <b>Quiz week</b>	Sat, Nov 29 <b>Quiz week</b>	05	06	<b>CHAPTER:7 Alcohols, Phenols and Ethers</b>	Preparation, Reactivity and Reactions of Phenols Difference between Alcohols and Phenols and Identification Tests for Alcohols and Phenols. 6. Ethers Structure, Preparation of Ether and Esters ,Physical and Chemical reactivity	<ol style="list-style-type: none"> <li>1. Write the Preparation and reactions of Phenols</li> <li>2. Write the identification test for Alcohols and Phenols.</li> <li>3. Define and explain the structure Properties, and Preparation of Ether and Ester.</li> <li>4. Explain Physical and Chemical properties of Ether and esters.</li> </ol>
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18	Mon, Dec 01	Fri, Dec 05	<b>Mid Term Exams</b>			
19	Mon, Dec 08	Sat, Dec 13	<b>Mid Term Exams</b>			
20	Mon, Dec 15	Fri, Dec 19	<b>Mid Term Exams and SPORTS GALA (19<sup>th</sup> to 20<sup>st</sup> Dec)</b>			
21	Mon, Dec 22	Sat, Dec 27	<b>Winter vacations</b>			
<b>Mid Term</b> <b>Total Working Days = 110</b> <b>Total Teaching Days = 82= 61.65 %</b> <b>Classes Conducted = 99 =61.11%</b>						

**After Winter Break**

<b>Week No.</b>	<b>Start Date</b>	<b>End Date</b>	<b>No. of Teaching days</b>	<b>No. Of Units</b>	<b>Topic/Chapter</b>	<b>Contents</b>	<b>Objectives</b> By the end of the unit S.W.A.T.:
22	Mon, Dec 29	Sat, Jan 03	02	02	<b>PAPER DISCUSSION</b>  <b>CHAPTER:8 Carbonyl Compounds 1: Aldehydes and Ketones</b>	1. Aldehyde and ketones Physical Properties 2. Structure of Aldehydes and Ketones	<b>Understand how to attempt paper properly and discuss answer key of second term paper</b>  1.Explain the difference between Aldehyde and ketones 2. Explain the nomenclature of Aldehyde and ketone 3. Write the Physical properties of Aldehyde and ketones 4. Explain the structure of Aldehyde and ketones
23	Mon, Jan 05	Sat, Jan 10	04	05	<b>CHAPTER:8 Carbonyl Compounds 1: Aldehydes and Ketones</b>	3. Preparations of Aldehydes and Ketones 4. Reactivity , Reactions of Aldehyde and Ketones.	1. Explain the Preparation and reactions of Aldehyde and ketones.
24	Mon, Jan 12	Fri, Jan 16	05	06	<b>CHAPTER: 9 Compounds 2: Carboxylic Acids and Functional Derivatives</b>	Introduction 1. Physical Properties 2. Structure 3. Acidity 4. Preparation of Carboxylic Acids and Functional Derivatives	1. Properties, structure and acidity of Carboxylic acids. 2. Write and Explain the preparation mechanism of reaction of Carboxylic acids and Functional Derivatives 3. Write and Explain the mechanism of reactions of Carboxylic acids and Functional Derivatives

25	Mon, Jan 19	Fri, Jan 23	05	06	<p><b>CHAPTER: 9 Compounds 2: Carboxylic Acids and Functional Derivatives</b></p> <p><b>CHAPTER 13 Spectroscopy</b></p>	<p>5. Reactions of Carboxylic Acids and Functional Derivatives Conversion of Carboxylic acids</p> <p>1. Introduction Methods of Spectroscopy 2. IR</p>	<p>1. Explain the Conversion of Carboxylic acids in to: *Acyl halide *Acid Anhydride *Esters *Amides *Alcohols *Alkane</p> <p>1. Define Spectroscopy and discuss its application in different fields. 2. Enlist the regions of electromagnetic spectrum used in IR 3. Describe application of IR</p>
26	Mon, Jan 26	Sat, Jan 31	05	06	<b>CHAPTER 13 Spectroscopy</b>	<p>3. UV 4. NMR 5. Atomic Emission and Absorption</p>	<p>1. Enlist the regions of electromagnetic spectrum used in UV and in Visible Spectroscopy. 2. Describe application of UV and NMR Spectroscopy 3. Explain Atomic Emission and Absorption</p>
27	Mon, Feb 02	Fri, Feb 06	03	04	<p><b>CHAPTER 13 Spectroscopy</b></p> <p><b>CHAPTER:10 Biochemistry</b></p>	<p>6. Mass Spectrometry</p> <p>1. Introduction of Carbohydrates</p>	<p>1. Describe application of Mass Spectrometry</p> <p>1. Define Carbohydrates and explain the classification based on structure. 2. Write the importance of Carbohydrates.</p>
28	Mon, Feb 09	Sat, Feb 14	05	06	<b>CHAPTER:10 Biochemistry</b>	<p>2. Proteins 3. Lipids 4. Minerals of Biological significance</p>	<p>3. Define Proteins and explain the structure, Properties and importance of Proteins. 4. Define Lipids and explain the structure, Properties and importance of Lipids. 5. Explain the sources and Biological Significance of important minerals. ( Iron, Calcium, Phosphorous and Zinc)</p>

					<b>CHAPTER:11 Industrial Chemistry</b>	1. Introduction to the Chemical Industry 2. Pharmaceutical Industry	1. Explain the role of Chemical Industry 2. Enlist different Pharmaceutical Products.
29	Mon, Feb,16	Fri, Feb 20	05	06	<b>CHAPTER:11 Industrial Chemistry</b>	3. Pesticides 1. Synthetic Polymers (PVC and Nylon) 2. Cosmetics: Lipsticks, Nail Polish and Remover, Perfumes 3. Adhesives	3. Enlist different Pesticides 4. Explain the formation and uses of PVC and Nylon 5. Describe the composition and effects of various cosmetics like Lipsticks, Nail Polish and Remover, Perfumes 6. Describe the Adhesives and their applications.
30	Mon, Feb, 23	Sat, Feb 28	05	06	<b>CHAPTER:12 Environmental Chemistry</b>	1. Introduction, Chemistry of the Troposphere 2. Chemistry of the Stratosphere 3. Water Pollution	1. Explain the buildup and adverse effects of Ozone in the Troposphere 2. Describe the role of Ozone in the stratosphere 3. Recognize and describe various water Pollutants.
31	Mon, Mar 02	Fri, Mar 06	05	06	<b>CHAPTER:12 Environmental Chemistry</b>	4. Water Analysis 5. Green Chemistry	1. Explain the various parameters of drinking water analysis. 2. Explain Green House effects and Global Warming
					<b>INDIVIDUAL PROBLEM SOLVING</b>		
32	Mon, Mar 09	Sat, Mar 14	04	05	<b>INDIVIDUAL PROBLEM SOLVING</b>		
33	Mon, Mar 16	Fri, Mar 20	03	04	<b>INDIVIDUAL PROBLEM SOLVING</b>		
34	Mon, Mar 23	Sat, Mar 28	00	00	<b>Preliminary Exams</b>		
35	Mon, Mar 30	Fri, Apr 03	00	00	<b>Preliminary Exams</b>		
36	Mon, Apr 06	Sat, Apr 11	00	00	<b>Preliminary Exams</b>		
<b>Till Preliminary Exams</b> <b>Working Days – 110 + 74 = 184</b> <b>Teaching Days – 82+ 51 = 133=100%</b> <b>Classes Conducted=99 + 63 =162</b>							

