COMMECS COLLEGE
Macro Plan (2024-25)

Subject: Chemistry
Class: XII (Pre-Medical & Pre-Engineering)

TERM –I						
Week No.	**Start Date**	**End Date**	**No. Of Units**	**Topic/Chapter**	**Contents**	**Objectives** By the end of the unit S.W.A.T.:
1	Thu, Aug 01	Fri, Aug 02	00	**BIEK PRACTICAL EXAM**		
2	Mon, Aug 05	Sat, Aug 10	01	**BIEK PRACTICAL EXAM**		
				CHAPTER 04 Nomenclature of organic compound	1. Introduction of Hydrocarbon and derivatives 2. History of Nomenclature	1. Give introduction of hydrocarbons 2. Naming different hydrocarbons
3	Mon, Aug 12	Fri, Aug 16	03	**CHAPTER 04 Nomenclature of organic compound**	3.IUPAC system 4. Nomenclature of: i. Alkanes ii. Alkenes iii. Alkynes	1. Name different organic compound 2. Identify different organic compounds 3. Name different organic compounds of alkane and alkene and alkynes
4	Mon, Aug 19	Sat, Aug 23	04	**CHAPTER 04 Nomenclature of organic compound**	iv. Alkyl Halides v. Amines vi. Alcohol vii. Phenol viii. Ether	1. Name different organic compounds Alkyl Halide, Amines, Alcohol, Phenol and Ether.
5	Mon, Aug 26	Sat, Aug 31	04	**CHAPTER 04 Nomenclature of organic compound**	ix. Aldehyde and Ketone x. Carboxylic acid xi. Ester xii. Amide xiii. Acyl Halides	1. Name different organic compounds of Aldehyde and Ketone and carboxylic Acid, Ester, Amide and Acyl Halides

6	Mon, Sep 02	Fri, Sep 06	04	**CHAPTER 5 Introduction to Hydrocarbons**	1. Types of Hydrocarbons 2. Alkanes and cycloalkanes 3. Radical substitution reaction 4. Alkenes i. Structure ii. Preparation of Alkenes	1. Write about types of Hydrocarbons 2. Write equations of the reactions related to saturated hydrocarbons 3. Explain reaction Mechanism of substitution in alkanes. 4. Make hybrid orbital model of alkene 5. Methods of preparation of alkenes by *dehydration of alcohols and *dehydrohalogenation of Alkyl Halides 6. Write addition, Polymeric and Oxidation reactions of Alkenes 7. Write about distinguishing test between saturated and unsaturated hydrocarbon
7	Mon, Sep 09	Sat, Sep 14	04	**CHAPTER 5 Introduction to Hydrocarbons**	iii. Reactions of Alkenes 5. Alkynes i. Structure ii. Preparation iii. Physical properties iv. Preparation of Alkynes by Elimination Reaction v. Acidity of terminal Alkynes vi. Addition reaction of Alkynes	1. Make hybrid orbital model of alkyne. 2. Methods of preparation of alkynes by Elimination reactions 3. Write addition, Polymeric, acidic and Oxidation reactions of Alkynes 4. Write about distinguishing test between *Alkanes and Alkynes
08	Mon, Sep 16	Fri, Sep 20	04	**CHAPTER 5 Introduction to Hydrocarbons**	6. Isomerism 7. Benzene and its derivatives i. Physical Properties ii. Structural and Molecular Orbital Aspects	1. Define and explain Structural Isomerism, Chiral Centre, Optical Activity, Optical Isomerism, Stereoisomerism 2. Preparation of benzene Derivatives of benzene 3. Explain the Physical Properties of Benzene 4. Explain the molecular orbital structure of Benzene
9	Mon, Sep 23	Sat, Sep 28	04	**CHAPTER 5 Introduction to Hydrocarbons**	iii. Addition Reaction iv. Electrophilic Substitution Reaction v. Substituent effect	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

10	Mon, Sep 30	Fri, Oct 04	04	**CHAPTER 1 Chemistry of Representative Elements**	1. Introduction and General Group trends of Representative Elements 2. Reactions of S-Block Elements with Oxygen, Water, Halogens, Nitrogen, Hydrogen, ***Alcohol***, Acids 3. Reactions of P-Block Elements 4. Flame Test	1. Understand general trends of different physical properties 2. Write chemical equations of reactions of s-block elements 3. Write chemical equations of reactions of p-block elements.(with Oxygen, Water, Halogens, Nitrogen, Hydrogen) 4. Know why different metals show different colours
11	Mon, Oct 07	Sat, Oct 12	04	**CHAPTER 1 Chemistry of Representative Elements**	5. Chemistry of Important Compounds of S-Block Elements i. Sodium Hydroxide ii. Bleaching Powder 6. Chemistry of Sulphuric Acid 7. Chemical Behaviour of Halogens 8. Diagonal relationship of representative elements.	1. Explain Castner Kellner cell ,physical and chemical properties of NaOH 2. Understand what is bleaching action , physical and chemical properties of bleaching Powder 3. Write about contact process , physical and chemical properties of sulphuric acid 4. Write about Bond Enthalpies in Halogens 5. Write reason about Strength of Halogens as oxidizing Agents: F>Cl>Br>I 5. Explain the Acidity of Hydrogen Halides 6. Explain about reducing properties of Halide ions and their relative Strength 7. Explain about diagonal relationship in representative elements and reasons behind it.
12	Mon, Oct 14	Fri, Oct 18	**First Term Exams (12th Oct – 21th Oct)**			
13	Mon, Oct21	Sat, Oct 26	**First Term Exams (12th Oct – 21th Oct)**			
Term – I **Working Days – 68** **Teaching Days – 55 (units #36)** **Classes Conducted = 34.6%**						

TERM –II						
Week No.	**Start Date**	**End Date**	**No. Of Units**	**Topic/Chapter**	**Contents**	**Objectives** By the end of the unit S.W.A.T.:
13	Mon, Oct21	Sat, Oct 26	01	**PAPER DISCUSSION**		**Understand how to attempt paper properly and discuss answer key of first term paper**
			02	**CHAPTER:2 Chemistry of Outer Transition (d block) Elements**	1. General features: i. Electronic structures ii. Binding energy iii. Variable oxidation state iv. Catalytic activity	1. Define Occurrence of the transition elements in Pakistan And General characteristics
14	Mon, Oct 28	Fri, Nov 01	04	**CHAPTER:2 Chemistry of Outer Transition (d block) Elements**	v. Magnetic behavior vi. Alloy formation vii. Colour of complexes 1. Nomenclature of co-ordination compounds	1. General characteristics of the transition elements 2. Name cationic complexes
15	Mon, Nov 04	Sat, Nov 09	04	**CHAPTER:2 Chemistry of Outer Transition (d block) Elements**	2. Nomenclature of co-ordination compounds 3. Chemistry of some important transition elements i. Chromium ii. Manganese iii. Iron iv. Copper	1. Name anionic and neutral complexes 2. Chemistry of potassium dichromate 3. Chemistry of potassium permanganate 4. Chemistry of steel, its types and application 5. Metallurgy of Copper
16	Mon, Nov 11	Fri, Nov 15	04	**CHAPTER:3 Organic Compounds**	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	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.
17	Mon, Nov 18	Sat, Nov 23	04	**CHAPTER:6 Alkyl Halides and Amines**	1. Introduction of Alkyl Halide i. Structure ii. Physical properties iii. Preparations of Alkyl Halide iv. Reactivity v. Elimination Reaction	1- Explanation of Alkyl halides, structure and their classification. 2- Write the Properties of Alkyl Halides. 3- Write the Preparation of Alkyl Halide * Reaction of Alcohols with Hydrogen Halides *Reaction of Alcohols with other Halogenating Agents ($SOCl_2$, PX_3) 4. Substitution reaction with $SN^1$and SN^2 Mechanism using different examples. 5. Elimination reaction with E_1 and E_2 Mechanism with different examples given in book.
18	Mon, Nov 25	Sat, Nov 30	04	**CHAPTER:6 Alkyl Halides and Amines**	2. Grignard's Reagents (Organometallic Compounds) i. Preparation of Grignard's Reagents ii. Reactivity of Grignard's Reagents 3. Amines i. Physical Properties ii. Structure iii. Basicity	1. Definition of Organo metallic Compounds 2. Write the Preparation of Grignard's reagent 3. Explain the reactivity of Grignard's reagent 4. Write the Reactions of Grignard's reagent *Reaction with Water *With Ester *With CO_2 *With Amines 5. Define Amine and its physical Properties 6. Explain structures and Basicity of Amine 7. Write the reactions for the preparation of Amine * By Alkylation of Ammonia *By Reduction of Nitrogen Containing Functional Group (Nitrile and Amide) 8. Write the Reactions of Amine *Alkylation of Amine by Alkyl Halide *Reaction of Amine with Aldehyde and Ketones *Preparation of Amide and Diazonium Salts
19	Mon, Dec 02	Fri, Dec 06	04	**CHAPTER:7 Alcohols, Phenols and Ethers**	4. Alcohols Structure, Physical properties , Preparation of Alcohol	1. Define and explain the structure Properties, and Preparation of Alcohols.

20	Mon, Dec 09	Sat, Dec 14	04	**CHAPTER:7 Alcohols, Phenols and Ethers**	Reactivity and reactions of Alcohols 5. Phenols Structure, Physical properties, Acidity	1. Write the reactions of Alcohols. 2. Define and explain the structure, Properties and Acidity of Phenols
21	Mon, Dec 16	Fri, Dec 20	03	**CHAPTER:7 Alcohols, Phenols and Ethers**	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	1. Write the Preparation and reactions of Phenols 2. Write the identification test for Alcohols and Phenols. 3. Define and explain the structure Properties, and Preparation of Ether and Ester. 4. Explain Physical and Chemical properties of Ether and esters.
			SPORTS GALA (19th to 20st Dec)			

22	Mon, Dec 23	Sat, Dec 28	**Winter vacations (21st to 31st Dec)**
23	Mon, Dec 30	Fri, Jan 3	**Winter vacations and Second Term Exams**
24	Mon, Jan 06	Sat, Jan 11	**Second Term Exams**
25	Mon, Jan 13	Fri, Jan 17	**Second Term Exams**

Term – II

Total Working Days – 68 + 58 = 126

Total Teaching Days – 55 + 40 = 95 (36+34=70 units)

Classes Conducted = 67.3 %

TERM –III						
Week No.	**Start Date**	**End Date**	**No. Of Units**	**Topic/Chapter**	**Contents**	**Objectives** By the end of the unit S.W.A.T.:
25	Mon, Jan 13	Fri, Jan 17	01 01	**PAPER DISCUSSION** **CHAPTER:8 Carbonyl Compounds 1: Aldehydes and Ketones**	1. Aldehyde and ketones Physical Properties 2. Structure of Aldehydes and Ketones	**Understand how to attempt paper properly and discuss answer key of second term paper** 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
26	Mon, Jan 20	Sat, Jan 25	04	**CHAPTER:8 Carbonyl Compounds 1: Aldehydes and Ketones**	3. Preparations of Aldehydes and Ketones 4. Reactivity , Reactions of Aldehyde and Ketones.	1. Explain the Preparation and reactions of Aldehyde and ketones.
27	Mon, Jan,27	Fri, Jan 31	03	**CHAPTER: 9 Compounds 2: Carboxylic Acids and Functional Derivatives**	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

28	Mon, Feb 03	Sat, Feb 08	01	**CHAPTER: 9 Compounds 2: Carboxylic Acids and Functional Derivatives**	5. Reactions of Carboxylic Acids and Functional Derivatives Conversion of Carboxylic acids	1. Explain the Conversion of Carboxylic acids in to: *Acyl halide *Acid Anhydride *Esters *Amides *Alcohols *Alkane
			02	**CHAPTER:10 Biochemistry**	1. Introduction of Carbohydrates 2. Proteins	1. Define Carbohydrates and explain the classification based on structure. 2. Write the importance of Carbohydrates. 3. Define Proteins and explain the structure, Properties and importance of Proteins.
29	Mon, Feb 10	Fri, Feb 14	03	**CHAPTER:10 Biochemistry**	1. Lipids 2. Minerals of Biological significance	1. Define Lipids and explain the structure, Properties and importance of Lipids. 2. Explain the sources and Biological significance of important minerals. (Iron, Calcium, Phosphorous and Zinc)
30	Mon, Feb,17	Sat, Feb 22	04	**CHAPTER:11 Industrial Chemistry**	1. Introduction to the Chemical Industry 2. Pharmaceutical Industry 3. Pesticides 1. Synthetic Polymers (PVC and Nylon) 2. Cosmetics: Lipsticks, Nail Polish and Remover, Perfumes 3. Adhesives	1. Explain the role of Chemical Industry 2. Enlist different Pharmaceutical Products. 3. Enlist different Pharmaceutical Products.(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.
31	Mon, Feb, 24	Fri, Feb 28	04	**CHAPTER:12 Environmental Chemistry**	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.

32	Mon, Mar, 03	Sat, Mar, 08	03 01	**CHAPTER:12 Environmental Chemistry** **CHAPTER:13 Spectroscopy**	4. Water Analysis 5. Green Chemistry 1. Introduction Methods of Spectroscopy	1. Explain the various parameters of drinking water analysis. 2. Explain Green House effects and Global Warming 1. Define Spectroscopy and discuss its application in different fields.
33	Mon, Mar 10	Fri, Mar 14	04	**CHAPTER 13 Spectroscopy**	2. Introduction Methods of Spectroscopy 3. IR 4. UV 5. NMR	1. Enlist the regions of electromagnetic spectrum used in IR, UV and in Visible Spectroscopy. 2. Describe application of IR , UV and NMR Spectroscopy
34	Mon, Mar,17	Sat, Mar 22	03	**CHAPTER 13 Spectroscopy**	1. Atomic Emission and Absorption 2. Mass Spectrometry	1. Explain Atomic Emission and Absorption 2. Describe application of Mass Spectrometry
35	Mon, Mar 22	Sat, Mar 29		**INDIVIDUAL PROBLEM SOLVING**		
36	Mon, Mar 22	Fri, April 04		**INDIVIDUAL PROBLEM SOLVING**		
37	Mon, April 04	Sat, April 12	**Preliminary Exams**			
38	Mon, April 12	Fri, April 18	**Preliminary Exams**			

Term – III
Working Days – 126 + 57 = 183
Teaching Days – 95 + 42 = 137 (36+34+34= 104 units)
Classes Conducted = 100%