

Teaching Plan (2019-2020)

Semester – V

Name of the Course : Organic Chemistry III

Course code : CC1751

CO - No.	Course Outcome Upon completion of course students will be able to	PSO	CL
CO - 1	identify the methods of preparation, properties and reaction mechanism of phenols.	PSO - 4	U
CO - 2	prepare and analyze the reactions of poly nuclear hydrocarbons	PSO - 4	C
CO - 3	recognize the classification, preparation and properties of heterocyclic compounds	PSO - 1	R
CO - 4	evaluate the importance and structure of carbohydrates	PSO - 6	E
CO - 5	understand the inter conversions of carbohydrates	PSO - 1	U
CO - 6	pharmacological activities of drugs	PSO - 8	C
CO - 7.	synthesise various drugs	PSO - 4	C
CO - 8.	evaluate the synthetic uses of drugs	PSO - 5	E

Unit	Module	Topic	Lecture Hours	Learning Outcome	Pedagogy	Assessment/ Evaluation
I	Phenols					
	1.	Preparation and properties of phenol	2	To understand the importance of phenol and its methods of preparation	Lecture, Discussion	Evaluation through short test
	2.	Rearrangement reactions with mechanisms	3	To differentiate various reaction mechanisms	Lecture, Discussion	Formative assessment
	3.	Preparation and properties of Nitro phenol, picric acid and amino phenols.	2	To gain knowledge about monohydric phenols	Lecture	Formative assessment
	4.	Preparation, properties and uses of catechol, resorcinol and quinol	3	To get idea about dihydric alcohols	Lecture	Formative assessment, Short test
	5.	Preparation, properties and uses of phloroglucinol.	2	To differentiate trihydric alcohols	Question answer session, Lecture	Formative assessment, Assignment
II	Polynuclear Hydrocarbons					
	1.	Preparation and properties of diphenyl and diphenyl methane.	2	To know about poly nuclear hydrocarbons	Lecture with PPT Illustration	Formative assessment
	2.	Preparation and properties of triphenyl methane and stilbene.	2	To know the properties of aromatic compounds	Lecture, Illustration	Formative assessment
	3.	Haworth synthesis, reactions and structural elucidation of naphthalene and derivatives of naphthalene.	2	To understand clearly about naphthalene.	Lecture, Discussion	Formative assessment, Short test
	4.	Structural elucidation, reactions and uses	4	To study about poly nuclear hydrocarbons	Lecture, Discussion	Formative assessment, Online Quiz

		of anthracene and phenanthrene				
III	Heterocyclic Compounds					
	1.	Preparation and chemical properties of furan	2	To know about different properties of furan	Lecture, Illustration	Formative assessment, Assignment
	2.	Preparation and chemical properties of pyrrole	3	To learn about pyrrole	Lecture, Illustration	Formative assessment
	3.	Preparation and chemical properties of pyridine	4	To analyse the properties of pyridine	Lecture	Formative assessment Short test
	4.	Preparation and chemical properties of quinoline, isoquinoline and indole	3	To recognise the various types of heterocyclic Compounds	Lecture with PPT Illustration	Seminar, Formative assessment
IV	Carbohydrates					
	1.	Preparation and chemical reactions of glucose and fructose	2	To know about different electrolytes	Lecture	Formative assessment
	2.	Epimerization and, mutarotation	1	To understand and differentiate between epimerization and, mutarotation.	Lecture, Discussion	Formative assessment, Short test
	3.	Intercoversion between aldoses and ketoses.	2	To acquire knowledge about interconversions.	Lecture	Short test
	4.	Structural elucidation of maltose and sucrose.	3	To evaluate the structure of disaccharides	Lecture, Discussion	Formative assessment
	5..	Structure of starch and cellulose	2	To know about polysaccharides	Lecture	Formative assessment

V	Drugs and Pharmaceuticals					
	1.	Procedures followed in drug design. Lead components and modification.	4	To know about drug design and modification	Lecture, Discussion	Formative assessment
	2.	Pharmacological activities of drugs , receptors , metabolites and antimetabolites	3	To gather knowledge regarding the Pharmacological activities of drugs	Lecture	Formative assessment
	3.	Synthesis of chloramphenicol, benadryl and paracetamol, anti-inflammatory drugs	1	To understand the synthesis and application of drugs	Lecture, Illustration	Formative assessment, Short test
	4	Synthesis of cardiovascular drugs, antileprosy drug, HIV related drugs.	4	To learn the synthesis and application of various drugs.	Lecture, Discussion	Formative assessment, Seminar

Course Instructor: R.Gladis Latha

HOD: G. Leema Rose

Name of the Course : Inorganic Chemistry II

Course code : CC1752

CO - No.	Course Outcome Upon completion of course students will be able to	PSO	CL
CO - 1	identify the p-block elements in the periodic table.	PSO - 1	R
CO - 2	analyze the properties of p- block elements	PSO - 2	An
CO - 3	compare inorganic and organic polymers	PSO - 2	U
CO - 4	explain the different metallurgical processes	PSO - 8	Ap
CO - 5	compare the stability of different atomic nuclei.	PSO - 7	E
CO - 6	illustrate principle of atom bomb and nuclear reactor.	PSO - 1	Ap

Unit	Module	Topics	Lecture hours	Learning Outcome	Pedagogy	Assessment/ Evaluation
Chemistry of p-block elements - I						
I	1	General characteristics of Boron family with special reference to inert pair effect - extraction of boron – properties and uses.	3	Explain the characteristics of Boron family elements	Lecture	Evaluation through short test
	2	Boron trifluoride and boron trichloride – aluminiumtrichloride- preparation, properties and structure.	2	Gain idea about the compounds.	Lecture	
	3	Hydrides of boron – preparation, properties and structure of diborane and carboranes. Preparation, properties and structure of boron nitride and borazine.	2	Know the characteristics of Boron and its compounds.	Lecture with ppt	
	4	General characteristics– comparison of carbon and silicon – structure of diamond and graphite – Fullerenes (definition and examples).	3	Clear idea about allotropes of carbon	Lecture, showing examples of allotropes	
	5	Metal carbides – classification with examples – their applications in industry. Preparation and uses of silica, silicic acid and silica gel. Silicones – preparation and uses. Silicon carbide – preparation, properties and uses.	2	Know the importance of silica and metal carbides	Lecture with ppt	Evaluation through short test

Chemistry of p-block elements - II						
II	1	General characteristics – allotropes of phosphorous and arsenic. Structure of oxides of nitrogen, structure of oxy acids of phosphorous.	4	Draw the structure of oxides of nitrogen and oxy acids of phosphorus.	Question answer session	Multiple choice questions
	2	Preparation, properties and uses of hydrazine, hydrazoic acid and hydroxyl amine.	3	Understand the characteristics of hydrazine, hydrazoic acid and hydroxylamine.	Lecture.	
	3	Anomalous behaviour of oxygen, allotropes of sulphur, oxyacids of sulphur- Caro's acid and Marshall's acid – preparation, properties and structure.	4	Explain the anomalous behaviour of Oxygen and sulphur.	Lecture with ppt, Group discussion	Short test Formative assessment - I
		General characteristics of halogens, peculiarities of fluorine, inter halogen compounds – definition, preparation, types and structure of XY, XY ₃ , XY ₅ and XY ₇ . Pseudohalogens- preparation and properties of cyanogens, thiocyanogen, selenium cyanogen and azido carbondisulphide, inter pseudohalogen compounds.	2	Understand the characteristics of halogens and pseudohalogens	Group discussion	
Noble gases:						
III	1	Occurrence, electronic configuration and rationalization of	2	Get idea about noble gases.	Seminar	

		inertness of noble gases. Isolation of noble gases from the atmosphere-Rayleigh's and Dewar's method. Hydrates of noble gases.				Short test
	2	Clathrates compounds – preparation, properties and uses. Preparation, properties and structure of XeF ₂ , XeF ₄ , XeF ₆ , XeOF ₂ , XeOF ₄ and XeO ₃ .	4	Explain clathrate compounds.	Lecture using ppt	Assignment
	3	Definition – properties, types of inorganic polymers, comparison with organic polymers, synthesis, structural aspects and applications of siloxanes. Preparation and properties of silicates, phosphazenes and polysulphates.	5	Compare inorganic and organic polymers.	Lecture	
Metallurgy and Alloys						
IV	1	. Minerals and ores – difference between minerals and ores, metallurgical processes – gravity separation, magnetic separation, froth floatation, roasting, calcination and smelting. Purification by electrolysis, oxidative refining, zone refining, Mond's process, Van - Arkel de-Boer process and Kroll's process.	3	Differentiate ores and minerals and understand the methods of purification of ores.	Illustration, Seminar	Multiple choice questions Formative assessment - II

	2	Extraction, properties and uses of V, W, Mo and Ti. Poly valency of vanadium.	3	Know the extraction of metals.	Lecture, Group discussion with ppt	
	3	Definition, purpose of making alloys. Types of alloys – ferrous alloys and non ferrous alloys with examples.	3	List the applications of alloys.	Lecture	Quiz
	4	Preparation of alloys- heat treatment of alloys – composition and uses– bronze, german silver, nichrome, monel metal, stainless steel, gun metal and bell metal.	3	Know the composition of different alloys.	Lecture, Illustration	

Nuclear Chemistry

V	1	Nuclear forces- nuclear size- atomic mass unit and N/P ratio. Packing fraction - mass defect-binding energy. Nuclear models- shell and liquid drop. Radioactivity - α , β , γ radiations-their properties. Soddy's group displacement law. Natural radioactivity- detection and measurement of radioactivity by Geiger-Muller method	2	Explain the phenomenon of radioactivity.	Lecture, Quiz	Short test
	2	Rate of radioactive disintegration- decay constant-half life period-average life period. Radioactive equilibrium, artificial radioactivity-artificial transmutation of elements.	3	Calculate decay constant and half life period.	Lecture with ppt	Formative assessment - III
	3	Nuclear reactions- nuclear fission – principle of atom bomb. Nuclear reactor – thermal and fast breeder	3	Gain knowledge about the types of nuclear	Lecture, Group discussion	

		reactor. Radioactive hazards- disposal of radioactive waste from nuclear reactors Nuclear fusion – principle of hydrogen bomb and stellar energy. Principle and working of cyclotron.		reactions.		
	4	Applications of radio activity - radioactive tracers in agriculture, medicine and industry. Radiocarbon dating.	4	Apply radioactivity in different branches of science.	Lecture with ppt	

Course Instructor: L. Deva Vijila

HOD: G. Leema Rose

Name of the Course : Physical Chemistry II
Course code : CC1753

CO - No.	Course Outcome Upon completion of course students will be able to	PSO	CL
CO - 1	list out various types of dilute solutions	PSO - 1	R
CO - 2	determine the various colligative properties	PSO - 2	R
CO - 3	calculate the molar mass using colligative properties	PSO - 4	An
CO - 4	illustrate the different types of systems using thermodynamics	PSO - 2	Ap
CO - 5	interpret and correlate the laws of thermodynamics	PSO - 2	AP
CO - 6	calculate the various kinds of energy	PSO - 5	An
CO - 7	compare the entropy change of difficult processes	PSO - 2	E
CO - 8	assess the absolute entropy of solids, liquids and gases	PSO - 5	E
CO - 9	create the group multiplication table	PSO - 3	C
CO - 10	assign point groups to simple molecules	PSO - 4	C

Unit	Module	Topic	Lecture Hours	Learning Outcome	Pedagogy	Assessment/ Evaluation
I	Solutions and Colligative Properties					
	1.	Solutions of non-electrolytes, solutions of liquids in liquids	1	Know the various types of solutions	Lecture, Discussion	Evaluation through short test, Formative assessment, assignment and MCQs
	2.	vapour pressure of non-ideal solutions, type I, type II and type III	1	Know the vapour pressure of solutions	Lecture	
	3.	Vapour pressure, composition and boiling point Composition curves	1	Understand vapour pressure – composition and boiling point - composition curves	Lecture, Discussion	
	4.	Composition curves of completely miscible binary solutions , type I, type II and type III.	2	Draw curves of completely miscible binary solutions - type I, type II and type III.	Lecture	
	5.	Theory of fractional, azeotropic and steam distillations. Solubility of partially miscible liquid systems.	2	Know fractional, azeotropic and steam distillations.	Lecture	
	6.	Phenol-water system, triethylamine -water system and nicotine-water system.	2	Differentiate upper and lower CST	Lecture, Discussion	
	7.	Colligative properties, definition and examples	1	Understand Colligative properties	Lecture	
	8.	Thermodynamic derivation of relation between concentration and elevation of boiling point	1	Derive the correlation between concentration and elevation of boiling point	Lecture, Discussion	

	9.	Osmosis , reverse osmosis , osmotic pressure and determination of molar mass by depression of freezing point.	3	Derive the correlation between concentration, freezing point and osmotic pressure	Question answer session Lecture	
	10.	Van't Hoff factor degree of association and dissociation.	1	Know Van't Hoff factor	Lecture, Discussion	
II	Thermodynamics - I					
	1.	Chemical thermodynamics, importance of system, boundary and surroundings.	2	Know fundamentals of thermodynamics	Lecture with PPT Illustration	Formative assessment, Short test, MCQs Assignment
	2.	Types of systems - open, closed and isolated. Types of processes - isothermal, adiabatic, isobaric and isochoric, reversible and irreversible process.	2	Differentiate isothermal, adiabatic, isobaric and isochoric, reversible and irreversible process.	Lecture, Illustration	
	3.	Difference between reversible and irreversible process. First law of thermodynamics – different statements.	1	Differentiate reversible and irreversible process	Lecture - Discussion	
	4.	Internal energy and first law , mathematical derivation of first law of thermodynamics. State and path functions	2	Derive first law of thermodynamics	Lecture	
	5.	Heat capacity of a system - heat capacity at constant volume (Cv) and heat capacity at constant pressure (Cp)	1	Relate Cp and Cv	Lecture - Discussion	

		relationship between Cp and Cv				
6.	. Joule Thomson effect ,Joule Thomson Coefficient of ideal, real gases and real gases obeying Vanderwaal's equation definition of .Inversion temperature .	2	Derive Joule Thomson Coefficient of ideal, real gases and real gases and Vanderwaal's equation	Lecture - Discussion		
7.	Derivation of .Zeroth law of thermodynamics ,calculation of ΔE , q, ΔH and w for an ideal and real gas. Enthalpy of a system	1	Calculate of ΔE , q, ΔH and w for an ideal and real gas	Lecture - Discussion		
8.	Enthalpy of combustion, enthalpy of neutralization and enthalpy of formation.	1	Know enthalpy of combustion, enthalpy of neutralization and enthalpy of formation	Lecture - Discussion		
9.	Variation of enthalpy of a reaction with temperature (Kirchoff's equation).	1	Derive Kirchoff's equation	Lecture		
10.	Hess's law of constant heat summation and its applications.	1	Know Hess's law of constant heat summation and its applications.	Lecture		
III	Thermodynamics – II					
1.	Limitation of first law and need for second law of thermodynamics, second law of thermodynamics and spontaneous process	2	Know second law of thermodynamics and spontaneous process	Lecture, Illustration	Formative assessment, Seminar, Short test,	
2.	Carnot's cycle,	1	Know Carnot's	Lecture,		

		efficiency of heat engine and Carnot's theorem.		cycle, Carnot's theorem	Illustration	MCQs Assignment
	3.	Third law of thermodynamics, concept of entropy, entropy changes in reversible and irreversible processes.	2	Know Third law of thermodynamics	Lecture	
	4.	Isothermal, isobaric and Isochoric processes. Entropy of mixing and physical significances of entropy.	2	Give the significance of entropy.	Lecture with PPT Illustration	
	5.	Work function (A), Gibb's Free Energy Function (G) and their significances.	1	Understand Work function (A), Gibb's Free Energy Function (G) and their significances	Lecture - Discussion	
	6.	Derivation of Gibb's Helmholtz equation and its applications.	1	Derive Gibb's Helmholtz equation and its applications.	Lecture	
	7.	Partial molar quantities, partial molar free energy and Gibb's Duhem equation – applications	2	Derive Gibb's Duhem equation and its applications.	Lecture - Discussion	
	8.	Clapeyron equation its applications, Clausius Clapeyron equation and its applications	2	Derive Clausius – Clapeyron equation and applications	Lecture - Discussion	
IV	Thermodynamics – III					
	1.	Thermodynamic treatment of law of mass action Van't Hoff reaction	2	To know Van't Hoff reaction isotherm and its significance.	Lecture	

		isotherm and its significance.				Formative assessment, Short test, MCQs Assignment
2.	Van't Hoff isochore and significance. Fugacity concept determination of fugacity of real gases	2	Understand the concept of Fugacity and its determination	Lecture, Discussion		
3.	variation of fugacity with temperature and pressure	1	Know the variation of fugacity with temperature and pressure	Lecture		
4.	Physical significance of fugacity, Activity and Activity coefficient.	1	To gather knowledge regarding activity and activity coefficient	Lecture, Discussion		
5.	Nernst Heat theorem and its applications.	1	Derive Nernst heat theorem and its applications	Lecture - Discussion		
6.	Determination of absolute entropy of solids, liquids and gases, exceptions to the third law of thermodynamics	2	Gather knowledge in the determination of absolute entropy of solids liquids and gases	Lecture		
7.	Thermodynamic interpretation of Le-chatelier principle statement	2	Able to interpret Le-chatelier principle	Lecture - Discussion		
8.	Effect of change of temperature and pressure on chemical equilibria.	2	Know the Effect of change of temperature and pressure on chemical equilibria.	Lecture - Discussion		
V	Group Theory					
1.	Symmetry elements and symmetry	2	To know different	Lecture, Discussion		

		operations. Definition of identity (E) and proper rotational axis.		symmetry operations		Short test, Formative assessment, Seminar
2.		Mirror plane (σ), inversion centre (i) and rotation reflection axis (S_n).	2	To gather knowledge regarding the inversion centre (i) and rotation reflection axis	Lecture	
3.		Symmetry operations generated by symmetry elements- H_2O , NH_3 , BF_3 , $[PtCl_4]^{2-}$, H_2O_2 (Planar, cis and trans) and CH_4 as examples.	3	To understand Symmetry operations generated by symmetry elements- H_2O , NH_3 , BF_3 , $[PtCl_4]^{2-}$, H_2O_2	Lecture, Illustration	
4		Group postulates ,abelian , non-abelian and cyclic group	2	Differentiate abelian and non abelian	Lecture, Discussion	
5.		Group multiplication table	1	Construct Group multiplication table	Lecture	
6.		Molecular point groups , assignment of point groups to simple molecules like H_2O , NH_3 and CO_2	2	To assign point groups to simple molecules like H_2O , NH_3 and CO_2	Lecture - Discussion	
7.		Determination of a point group.	1	To determine point groups for simple molecules.	Lecture - Discussion	

Course Instructor: M. Anitha Malbi

HOD: G. Leema Rose

Name of the Course : Green Chemistry
Course code : CC1754

CO - No.	Course Outcome Upon completion of course students will be able to	PSO	CL
CO - 1	know the principles of green chemistry	PSO - 1	R
CO - 2	design green synthesis	PSO - 5	C
CO - 3	interpret green method for organic synthesis	PSO - 3	E
CO - 4	synthesize various compounds by microwave and ultrasound assisted methods	PSO - 4	C
CO - 5	analyze the important techniques and directions in practicing green chemistry	PSO - 2	An
CO - 6	identify the importance of green chemistry in day to day life	PSO - 8	Ap

Unit	Module	Topics	Lecture hours	Learning Outcome	Pedagogy	Assessment/ Evaluation
Introduction to green chemistry						
I	1	Definition , need for green chemistry and scope of green chemistry.	2	Know the need for green chemistry	Lecture with ppt, Group discussion	Short test
	2	Concept of atom economy , yield , mass intensity and atom economy. Calculation of atom economy, mass intensity, mass productivity and carbon efficiency.	4	Calculate the atom economy, mass intensity, mass productivity and carbon efficiency	Seminar	Multiple choice questions
	3	Different types of reactions and atom economy , addition, substitution, elimination and rearrangements.	2	Differentiate the types of reactions	Illustration, Seminar	Short test
	4	Concept of selectivity, enantioselectivity and chemoselectivity	2	Understand the concept of selectivity	Lecture with ppt	Assignment
	5	Regioselectivity and diastereoselectivity.	2	Know the different types of selectivity	Lecture, Group discussion	Short test Formative assessment - I
Green solvent						
II	1	Super critical fluids, Introduction , extraction of super critical fluids, solvents of super critical fluid , advantages and applications Carbon dioxide as a super critical fluid	4	Learn the extraction and advantages of super critical fluids .	Question answer session	Short test
	2	Features of technique	3		Lecture	

		for using super critical carbon dioxide, advantages and application. Chemical reaction in supercritical water and Near, Critical Water (NCW) , Region		Understand the features of technique for using super critical carbondioxide		Multiple choice questions
	3	Extraction natural products, dry cleaning, supercritical polymerization, hydrogenation and hydroformylation. Ionic liquid as green solvent: Introduction , synthesis of ionic liquids, acidic ionic liquid and neutral ionic liquids , applications in organic synthesis.	4	Know the process of extraction of natural products and applications	Lecture with PPT, Group discussion	Short test Formative assessment - I
Green catalyst						
III	1	Catalysis over view, acid catalyst , basic catalyst, oxidation catalyst,, polymer supported catalyst , photosensitized super acid catalyst and Tetra AmidoMacrocylic Ligand(TAML) catalyst.	3	Understand the different types of catalyst	Seminar	Short test
	2	Biocatalyst, microbial oxidation, microbial reduction, enzyme catalyzed hydrolytic process, per fluorinated catalyst and modified biocatalyst.	4	Know the action of Biocatalyst	Assignment	Assignment on MO diagrams Quiz
	3	Development of mesoporous supports by liquid crystal templating, neutral templatingmethods , heterogeneous catalyst , solid supported catalyst.	5	Compare the Development of mesoporous supports by various methods	Lecture with PPT, Group discussion	Formative assessment - II

Green synthesis						
IV	1	Green synthesis of the following compounds, Adipic acid, Catechol, Benzoyl bromide, Acetaldehyde, Citral, Ibruprofen and Paracetamol	3	Synthesize different compounds by Green synthesis method	Illustration, Seminar	Multiple choice questions
	2	Microwave assisted reactions in water , Hoffmann Elimination, Hydrolysis of benzyl chloride and methyl benzoate , oxidation of toluene and alcohols.	3	Learn the different microwave assisted reactions in water	Lecture, Group discussion	Formative assessment - II
	3	Microwave assisted reactions in organic solvents , Esterification, Fries rearrangement, Claisen Rearrangement , Diels – Alder Reaction and Decarboxylation.	3	Understand the different microwave assisted reactions in organic solvents	Lecture with ppt	Quiz
	4	Ultra sound assisted reactions , Esterification, Saponification, alkylation, oxidation, reduction, coupling reactions and Cannizzaro reactions	3	Learn the different Ultra sound assisted reactions	Lecture, Illustration	Short test
Green reactions involving basic principle of green chemistry						
V	1	Twelve principles of green chemistry – choice of starting materials – biomimetic, multifunctional reagents , materials reagents.	3	Know the twelve principles of green chemistry	Lecture, Quiz	Short test
	2	Combinatorial green chemistry, Green Chemistry in sustainable developments.	3	Understand the importance of Green Chemistry in sustainable developments	Lecture with PPT	Quiz

	3	Importance of Green chemistry in day to day life, versatile bleaching agents and analgesic drugs	4	Learn the Importance of Green chemistry in day to day life	Lecture, Group discussion	Assignment Formative assessment - III
--	---	--	---	--	---------------------------	--

Course Instructor: .S.Ajith Sinthuja

HOD: G. Leema Rose

Name of the Course : Chemistry for competitive examination

Course code : CSK175

CO - No.	Course Outcome Upon completion of course students will be able to	PSO	CL
CO - 1	recognize and remember theories of atoms	PSO - 1	U
CO - 2	predict chemical bonding	PSO - 2	C
CO - 3	analyse the composition and constituents of atmospheric air	PSO - 8	An
CO - 4	measure the hardness of water	PSO - 5	E
CO - 5	differentiate between metals and non metals	PSO - 2	U
CO - 6	analyse the chemical compounds present in polymers, drugs and fertilizers	PSO - 11	An

Unit	Module	Topics	Lecture hours	Learning outcome	Pedagogy	Assessment/ Evaluation
Matter						
I	1	Definition of matter, physical classification, properties of solids, liquids and gases, changes of physical state.	1	Differentiate between physical properties of solids, liquids and gases,	Lecture discussion	Short test Multiple choice questions Assignment
	2	Chemical classifications of elements, compounds, mixtures.	1	Know the classifications of elements, compounds, mixtures	Question answer session	
	3	Classifications of metals, non metal and metalloids with example. physical states of some important elements.	1	Evaluate the properties of metal and non metal	Illustration lecture method	
	4	Compounds, definition, classifications of inorganic and organic compounds with examples, Some important compounds and their common names and uses. Characteristics of compounds.	1	Differentiate between inorganic and organic compounds	seminar	
	5	Mixtures, definitions- classifications homogenous and heterogeneous examples properties of	1	Evaluate properties of compounds and mixtures.	Lecture with PPT	

		mixtures, differences between compounds and mixtures.				
	6	Separation of mixtures – techniques, principles and examples; Handpicking, sieving, magnetic separation, sublimation, sedimentation, Decantation, filtration, evaporation, Distillation, Crystallization	2	Learn the different techniques of separation of mixtures	demonstration	
Structure of Atoms						
II	1	Atoms, definition, Dalton's atomic theory, atom models, Rutherford, J.J. Thomson and Bohr	1	Understand the atom models	Group discussion	Assignment,
	2	Sub-atomic particles, charges of sub-atomic particles, discoveries of subatomic particles.	1	Know the sub atomic particles	Illustration lecture method	Short test Multiple choice questions
	3	Atomic and mass number isotopes, symbols for elements	1	Remember the symbols for elements	Question answer session	
	4	Principles governing filling up of electrons in the orbitals. Electronic configurations of first twenty	1	Learn filling up of atomic orbitals	lecture method	

		elements.				
Classification of Elements and Periodicity of Properties						
III	1	Classification of elements of Doberiner, Newlands, Mendeleev and modern Periodic tables	1	Remember the different forms of periodic tables	Group discussion	Short test, Multiple choice questions, Online assignment
	2	Group and Periods – classification of elements into s,p,d and f block with examples	2	Learn the classification of the elements	Lecture method	
	3	Periodicity of properties –atomic – ionic radii - ionization potential energy	1	Analyse the variation in periodic properties.	Group discussion	
	4	Electron affinity and electronegativity.	1	Evaluate the variation in Electron affinity and electronegativity	Question answer session	
Chemical Bonding and Non-Metals						
IV	1	Need for the chemical bond formation-introduction to ionic bond, covalent bond, co-ordinate bond and metallic bond- ionic bond formation, lattice energy- formation with example as NaCl	2	Differentiate the types of bonds	Lecture with PPT	Short test, Multiple choice questions
	2	Covalent bond – definition and explanation using H ₂ , O ₂ , N ₂ and CH ₄	1	Identify covalent bond	Lecture method	
	3	Properties of ionic and covalent compounds Noble gases and their applications	1	Learn the properties of covalent bond	Seminar	
	4	Halogens and their applications preparation and uses of Hydrogen, phosphorus and sulphur	1	Know the uses of H, P and S	Group discussion	
	5	Allotropes of Carbon - graphite, diamond and fullerene.	1	Differentiate the allotropes of carbon	Question answer session	

Air and Water						
V	1	Atmosphere, different layers of atmosphere and their compositions, composition of air, uses of various components of air	1	Analyse the components of air	Lecture with PPT	Multiple choice questions, Formative assesment
	2	Air pollution, sources, effects and control measures	1	Evaluate the sources of air pollution	Group discussion	
	3	Water, abnormal properties of water and its explanation using H-bonding- Hard and soft water, temporary and permanent hardness	1	Compare the different water sources and analyse its hardness	Demonstration	
	4	Removal of hardness – Boiling, Clarks process, Zeolite process and washing soda process, Reverse osmosis	1	Learn the methods of removal of hardness	Illustration of lecture method	
	5	preparation and uses of distilled water	1	Understand the uses of distilled water	Group discussion	

Course Instructor : K. Francy

HOD: G. Leema Rose