KOTHARI INTERNATIONAL SCHOOL

GRADE - 11 ANNUAL ACADEMIC PLAN

SUBJECT: CHEMISTRY SESSION: 2022-23

NAME OF THE SUB TEACHER : MONIKA MAURYA

- **THEORY –70 MARKS(3 HOURS)**
- **PRACTICAL - – 30 MARKS(3 HOURS)**

MONTH	UNIT	CONTENT(SUB-TOPICS)	SUBJECT ENRICHMENT ACTIVITY
MAY (05 DAYS)	**Unit I:** Some Basic Concepts of Chemistry	General Introduction: Importance and scope of Chemistry. Nature of matter, laws of chemical combination, Dalton's atomic theory: concept of elements, atoms and molecules.	Briefing of crystallisation
JUNE **SUMMER VACATION**	------	------	
JULY (20 DAYS)	**Unit I:** Some Basic Concepts of Chemistry(*to be continued…*)	Atomic and molecular masses, mole concept and molar mass, percentage composition, empirical and molecular formula, chemical reactions, stoichiometry and calculations based on stoichiometry.	Solve the intext & exercise questions based on significant figures & quantum numbers in class notebook
	Unit II: Structure of Atom	Discovery of Electron, Proton and Neutron, atomic number, isotopes and isobars. Thomson's model and its limitations. Rutherford's model and its limitations, Bohr's model and its limitations, concept of shells and subshells, dual nature of matter and light, de Broglie's relationship, Heisenberg uncertainty principle, concept of orbitals.	**AIL(Art Integrated Learning) assignment will be given.** **Term-1 Practical write up of all experiments and Investigatory project file instructions will be given.**

AUGUST (19 DAYS) **UNIT TEST – 1** **(COMMENCING 08 AUGUST & ENDING 26 AUGUST 2022)**	**Unit III:** Classification of Elements and Periodicity in Properties	Significance of classification, brief history of the development of periodic table, modern periodic law and the present form of periodic table, periodic trends in properties of elements -atomic radii, ionic radii, inert gas radii, Ionization enthalpy, electron gain enthalpy, electronegativity, valency. Nomenclature of elements with atomic number greater than 100.	Describe the theory associated with the radius of an atom as it (a) gains an electron (b) loses an electron(in class notebook) **Mock test and Revision of Unit test-1 syllabus**
SEPTEMBER (22 DAYS) **PRACTICAL EXAMINATION COMMENCES 19 SEPTEMBER & ENDS 26 SEPTEMBER 2022.**	**Unit IV:** Chemical Bonding and Molecular Structure	Valence electrons, ionic bond, covalent bond, bond parameters, Lewis's structure, polar character of covalent bond, covalent character of ionic bond, valence bond theory, resonance, geometry of covalent molecules, VSEPR theory, concept of hybridization, involving s, p and d orbitals and shapes of some simple molecules, Molecular orbital theory of homonuclear diatomic molecules (qualitative idea only), Hydrogen bond.	Solve the intext, exercise & assignment questions on hybridisation ,VBT & MOT in class note book **Mock practice of Half yearly practicals**
OCTOBER (13 DAYS) **HALF YEARLY EXAMINATION COMMENCES 06 OCTOBER & ENDS 17 OCTOBER 2022**	**Unit V:** Chemical Thermodynamics	Concepts of System and types of systems, surroundings, work, heat, energy, extensive and intensive properties, state functions. First law of thermodynamics -internal energy and enthalpy, heat capacity and specific heat, measurement of ΔU and ΔH, Hess's law of constant heat summation, enthalpy of bond dissociation, combustion, formation, atomization, sublimation, phase transition, ionization, solution and dilution. Second law of Thermodynamics (brief introduction) Introduction of entropy as a state function, Gibb's energy change for spontaneous and non- spontaneous processes,	Discussion of thermodynamics involved in some common physical and chemical phenomena(process) in our surroundings/day-to-day life. **REVISION OF HALF YEARLY EXAMINATION SYLLABUS**

		criteria for equilibrium. Third law of thermodynamics (brief introduction).	
NOVEMBER (21 DAYS)	**Unit VI:** Equilibrium	Equilibrium in physical and chemical processes, dynamic nature of equilibrium, law of mass action, equilibrium constant, factors affecting equilibrium - Le Chatelier's principle Ionic equilibrium- ionization of acids and bases, strong and weak electrolytes, degree of ionization, ionization of poly basic acids, acid strength, concept of pH, hydrolysis of salts (elementary idea), buffer solution, Henderson Equation, solubility product, common ion effect (with illustrative examples).	To study the shift of equilibrium between ferric ions & thiocyanate ions by increasing the concentration of either of them. Record the observations in practical file. Solve the assignment & intext questions based on conjugate acid-base pair in class notebook
	Unit VIII: Redox Reactions	Concept of oxidation and reduction, redox reactions, oxidation number, balancing redox reactions, in terms of loss and gain of electrons and change in oxidation number, applications of redox reactions.	Solve(in class notebook) the assignment, intext & exercise questions based on calculating oxidation number of an element in a compound
DECEMBER (21 DAYS) **UNIT TEST- 2 COMMENCES ON 02 DECEMBER & ENDS ON 19 DECEMBER**	**Unit XII: Organic Chemistry - Some Basic Principles and Techniques**	General introduction, methods of purification, qualitative and quantitative analysis, classification and IUPAC nomenclature of organic compounds. Electronic displacements in a covalent bond: inductive effect, electromeric effect, resonance and hyper conjugation. Homolytic and heterolytic fission of a covalent bond: free radicals, carbocations, carbanions, electrophiles and nucleophiles, types of organic reactions.	Explain the types of Isomerism found in organic compounds with examples of each in class notebook

SYLLABUS COMPLETION BY 30 DECEMBER 2022.	**Unit XIII: Hydrocarbons**	**Classification of Hydrocarbons** **Aliphatic Hydrocarbons:** Alkanes - Nomenclature, isomerism, conformation (ethane only), physical properties, chemical reactions including free radical mechanism of halogenation, combustion and pyrolysis. Alkenes - Nomenclature, the structure of double bond (ethene), geometrical isomerism, physical properties, methods of preparation, chemical reactions: addition of hydrogen, halogen, water, hydrogen halides (Markovnikov's addition and peroxide effect), ozonolysis, oxidation, mechanism of electrophilic addition. Alkynes - Nomenclature, the structure of triple bond (ethyne), physical properties, methods of preparation, chemical reactions: acidic character of alkynes, addition reaction of - hydrogen, halogens, hydrogen halides and water. **Aromatic Hydrocarbons:** Introduction, IUPAC nomenclature, benzene: resonance, aromaticity, chemical properties: mechanism of electrophilic substitution. Nitration, sulphonation, halogenation, Friedel Craft's alkylation and acylation, directive influence of the functional group in monosubstituted benzene. Carcinogenicity and toxicity.	Solve in class notebook: (i)Explain Markovnioff's Rule. (ii)Addition of HBr to propene yields 2-bromopropane, while in the presence of benzoyl peroxide, the same reaction yields 1-bromopropane. Explain & give mechanism
JANUARY (15 DAYS) **ANNUAL EXAMINATION PRACTICALS**		**Mock practice of Half yearly practicals** **REVISION**	

COMMENCES ON 11 JANUARY & ENDS ON 18 JANUARY 2022.			
FEBRUARY (20 DAYS) ANNUAL EXAMINATION **ANNUAL EXAMINATION COMMENCES ON 13 FEBRUARY & ENDS ON 24 FEBRUARY 2023.**		**REVISION OF ANNUAL SYLLABUS**	

*****PRACTICAL / PROJECT WORK WILL RUN SIMULTANEOUSLY WITH ACADEMIC TRANSACTION.**