

ACADEMIC SESSION 2018-19 : COURSE PLANNING

Course Program Name - XI ABHILASHA

Course Code - RDJEE

Course Duration - 900 Hrs

TARGET EXAM - JEE MAIN / ADVANCED / KVPY / SCRA / CBSE Board Exam

Course Commencement : 04.06.2018

Subject - Chemistry

S.No	No. of week	Week Duration	No. of Classes	Topic(s) Name (No. of Lectures)	Sub-topic(s) Name (No. of Lectures)
1	W1	04/6/2018 to 09/06/18	6	Mole Concept	1. Importance and scope of chemistry. 2.laws of chemical combination 3.Dalton's atomic theory 4. concept of elements 5.atoms and molecules 6.Atomic and molecular masses
2	W2	11/06/18 to 16/06/18	6	Mole Concept	1.Mole concept and molar mass 2.percentage composition 3. empiricaland molecular formula 4. chemical reactions 5.stoichiometry 6. calculations based on stoichiometry
3	W3	18/06/18 to 23/06/18	6	Mole Concept	1.Exercise and Applications 2.Exercise and Applications 3.Exercise and Applications 4.Exercise and Applications 5.Exercise and Applications 6.Exercise and Applications
4	W4	25/06/18 to 30/06/18	6	Structure of Atom	1. Discovery of electron, proton and neutron 2.Discovery of electron, proton and neutron 3.atomic number, isotopes and isobars 4.Thompson's model and its limitations 5. Rutherford's model 6.Drawbacks
5	W5	02/07/18 to 07/07/18	6	Structure of Atom	1. Bohr's model and its limitations 2.Bohr's model and its limitations 3.concept of shells and subshells 4. dual nature of matter and light 5. de Broglie's relationship 6.Heisenberg uncertainty principle
6	W6	09/07/18 to 14/07/18	6	Structure of Atom	1.concept of orbitals, quantum numbers 2.shapes of s, p and d orbitals 3. rules for filling electrons in orbitals - Aufbau principle, Pauli exclusion principle and Hund's rule 4.electronic configuration of atoms 5.stability of half filled and completely filled orbitals 6.Exercises and applications

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7	W7	16/07/18 to 21/07/18	6	Periodic classification	1.Significance of classification 2. brief history of the development of periodic table, 3. modern periodic law and the present form of periodic table 4. periodic trends in properties of elements –atomic radii, ionic radii, 5.inert gas radii 6. ionization enthalpy
8	W8	23/07/18 to 28/07/18	6	Periodic classification	1. electron gain enthalpy 2. electron gain enthalpy 3. valence 4.Nomenclature of elements with atomic number greater than 100 5. Paulings scale 6. Applications and exercise
9	W9	30/07/18 to 04/08/18	6	Chemical Bonding	1.Valence electrons 2.ionic bond 3.ionic bond 4.bond parameters 5.Lewis structure, 6.polar character of covalent bond
10	W10	06/08/18 to 11/08/18	6	Chemical Bonding	1., covalent character of ionic bond 2. valence bond theory 3. resonance 4. geometry of covalent molecules 5.VSEPR theory 6.concept of hybridization involving s, p and d orbitals and shapes of some simple molecules
11	W11	13/08/18 to 18/08/18	6	Chemical Bonding	1.shapes of some simple molecules 2. MOT 3. MOT 4.Hydrogen bond 5. APPLICARIONS and EXERCISES 6.APPLICARIONS and EXERCISES
12	W12	20/08/18 to 25/08/18	6	States of Matter - Gaseous State	1.Three states of matter 2.intermolecular interactions 3., types of bonding 4. melting and boiling points, 5.role of gas laws in elucidating the concept of the molecule, Boyle's law, Charle's law, 6. Gay Lussac's law, Avogadro's law
13	W13	27/08/18 to 01/09/18	6	States of Matter - Gaseous State	1. ideal behaviour 2., empirical derivation of gas equation 3., Avogadro number, ideal gas equation. 4. Kinetic energy and molecular speeds 5. deviation from ideal behaviour, liquefaction of gases, critical temperature 6.Liquid State – Vapour pressure, viscosity and surface tension (qualitative idea only)

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14	W14	03/09/18 to 08/09/18	6	States of Matter - Gaseous State	1. Exercices and applications 2.Exercices and applications 3.Exercices and applications 4.Exercices and applications 5.Exercices and applications 6.Exercices and applications
15	W15	10/09/18 to 15/09/18	6	Chemical Equilibrium	1.Equilibrium in physical and chemical processes 2. dynamic nature of equilibrium, 3. law of mass action, 4.equilibrium constant 5. factors affecting equilibrium – Le Chatelier’s principle; 6. Effect of Temperature Change
16	W16	17/09/18 to 22/09/18	6	Chemical Equilibrium	1.Effect of Pressure Change 2..Effect of Volume Change 3..Effect of inert gas 4. Effect of catalyst 5. Applications 6.Applications
17	W17	24/09/18 to 29/09/18	6	Thermodynamics and Thermochemistry	1.Concepts of system 2. types of systems 3. surroundings 4. work 5., heat, energy 6. extensive and intensive properties
18	W18	01/10/18 to 06/10/18	6	Thermodynamics and Thermochemistry	1. state functions 2.First law of thermodynamics – internal energy and enthalpy 3.heat capacity and specific heat, 4.measurement of ΔU and ΔH 5. Carnot Cycle 6.Hess’s law of constant heat summation INDEPENDENT DAY
19	W19	08/10/18 to 13/10/18	6	Thermodynamics and Thermochemistry	1.enthalpy of : bond dissociation,combustion 2. formation, atomization, sublimation, 3.n, phase transition, ionization, solution and dilution. 4.Introduction of entropy as a state function 5. Second law of thermodynamics, Gibbs energy change for spontaneous and non-spontaneous process, criteria for equilibrium. 6.Third law of thermodynamics –Brief introduction.
20	W20	15/10/18 to 20/10/18	6	Redox reactions	1.Concept of oxidation and reduction 2., redox reactions, 3., oxidation number, 4. balancing redox reactions in terms of loss and gain of electron and change in oxidation numbers 5.applications of redox reactions. 6. Indicators

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21	W21	22/10/18 to 27/10/18	6	Redox reactions	1. KMnO_4 and $\text{K}_2\text{Cr}_2\text{O}_7$ 2. applications of redox reactions. 3. applications of redox reactions. 4. applications of redox reactions. 5. applications of redox reactions. 6. applications of redox reactions.
22	W22	29/10/18 to 03/11/18	6	Ionic Equilibrium	1. Concept of Acid and Base 2. Arrhenius, Bronsted and Lewis concept 3. pH, pKa, pKb 4. Strength of acid 5. common ion effect 6. salts of acids and base
23	W23	05/11/18 TO 10/11/18			Diwali
24	W24	12/11/18 TO 17/11/18	6	Ionic Equilibrium	1. strong acid & weak base, weak acid and strong base 2. weak acid and weak base 3. buffer solution 4. different types of buffer 5. Henderson equation 6. Solubility Product
25	W25	19/11/18 to 24/11/18	6	Ionic Equilibrium	1. solubility product 2. common ion effect 3. Applications and exercises 4. Applications and exercises 5. Applications and exercises 6. Applications and exercises
26	W26	26/11/18 to 01/12/18	6	Hydrogen	1. Position of hydrogen in periodic table 2. occurrence, isotopes, preparation, 3. properties and uses of hydrogen 4. hydrides – ionic, covalent and interstitial 5. physical and chemical properties of water, heavy water; 6. hydrogen peroxide-preparation, reactions, use and structure; hydrogen as a fuel.
27	W27	26/11/18 to 01/12/18	6	S Block	1. General introduction, electronic configuration 2. occurrence, anomalous properties of the first element of each group 3. diagonal relationship, trends in the variation of properties (such as ionization enthalpy, atomic and ionic radii) 4. trends in chemical reactivity with oxygen, water, 5. hydrogen and halogens; uses. Sodium carbonate, sodium chloride, sodium hydroxide and sodium hydrogencarbonate, biological importance of sodium and potassium. 6. CaO , CaCO_3 , and industrial use of lime and limestone, biological importance of Mg and Ca
28	W28	03/12/18 to 08/12/18	6	P Block	1. General introduction, electronic configuration, (GROUP 13) 2. occurrence, variation of properties, 3. oxidation states 4. trends in chemical reactivity, anomalous properties of first element of the group 5. Boron physical and chemical properties 6. some important compounds: borax, boric acids, boron hydrides. Aluminium: uses, reactions with acids and alkalis.

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29	W29	10/12/18 to 15/12/18	6	P Block	1.General introduction, electronic configuration, (GROUP 14) 2.occurrence, variation of properties, 3.oxidation states 4. trends in chemical reactivity, anomalous properties of first element of the group 5.t. Carbon - catenation, allotropic forms, physical and chemical properties; uses of some important compounds: oxides. 6.Important compounds of silicon and a few uses : silicon tetrachloride, silicones, silicates and zeolites, their uses.
30	W30	17/12/18 to 22/12/18	2	P Block	1.Applications 2.Applications
31	W31	24/12/18 to 29/12/18	6	GOC-I (Nomenclature)	1.Introduction 2.classification 3.IUPAC Nomenclature 4.IUPAC Nomenclature 5.IUPAC Nomenclature 6.IUPAC Nomenclature
32	W32	31/12/18 to 05/01/19	6	GOC - I (Nomenclature)	1.IUPAC Nomenclature 2.IUPAC Nomenclature 3.IUPAC Nomenclature 4. Bicyclic nomenclature 5.benzene system nomenclature 6.important compounds and its structure
33	W33	07/01/19 to 12/01/19	5	GOC - I (Isomerism)	1.introduction & classification 2.Structural isomerism 3.different types of structural isomerism 4.Applications 5.Stereoisomerism 6.Geometrical
34	W34	14/01/19 to 19/01/19	6	GOC - I (Isomerism)	1.allene, biphenyl, amines 2.optical isomerism 3.enantiomers, racemic mixture diastereomers, 4. meso compounds 5 conformers 6.cyclohexane (boat and chair form)
35	W35	21/01/19 to 26/01/19	6	GOC - II	1.introduction 2. homolytic and heterolytic 3.electronic displacement effect 4.inductive effect 5.electromeric effect 6.mesomeric effect
36	W36	28/01/19 to 02/02/19	6	GOC - II	1. resonance 2.stability of resonance 3. hyperconjugation 4. stability of carbocation 5.stability of free radical 6.stability of carbanion

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37	W37	4/2/2019 to 09/02/19	6	GOC - II	1.electrophiles vs nucleophiles 2.activator and deactivators, ortho para director 3.comparing the strength of acid 4.comparing the strength of bases 5.ortho effect 6.carbenes and nitrenes
38	W38	11/02/19 to 16/02/19	6	Hydrocarbons	1.Classification of Hydrocarbons. 2.Alkanes - Nomenclature 3. physical properties 4. chemical reactions including free radical mechanism of halogenation 5.combustion and pyrolysis 6. reactions of alkanes
39	W39	18/02/19 to 23/02/19	6	Hydrocarbons	1.Introduction to alkenes 2.Nomenclature, structure of double bond (ethene), geometrical isomerism, 3. physical properties, methods of preparation 4. addition of hydrogen, halogen, water, hydrogen halides (Markovnikov's addition 5.peroxide effect 6. ozonolysis, oxidation, mechanism of electrophilic addition
40	W40	25/02/19 to 02/03/19	6	Hydrocarbons	1. Nomenclature, structure of triple bond (ethyne) 2. physical properties 3. methods of preparation 4.chemical reactions: acidic character of alkynes 5. addition reaction of - hydrogen, 6. halogens, hydrogen halides and water
41	W41	04/03/19 to 09/03/19	6	Hydrocarbons	1.Aromatic hydrocarbons - Introduction, IUPAC nomenclature 2.Benzene: resonance, aromaticity 3.chemical properties: mechanism of electrophilic substitution - nitration sulphonation, 4.n, halogenation, Friedel Craft's alkylation and acylation 5. directive influence of functional group in mono-substituted benzene 6.carcinogenicity and toxicity
42	W42	11/03/18 to 16/03/18	6	Environmental Chemistry	1.Environmental pollution - Air, water and soil pollution 2. chemical reactions in atmosphere, smogs, major atmospheric pollutants 3.acid rain, ozone and its reactions, effects of depletion of ozone layer, greenhouse effect and global warming 4.pollution due to industrial wastes 5.green chemistry as an alternative tool for reducing pollution 6. strategy for control of environmental pollution