

# COURSE STRUCTURE

SUBJECT : CHEMISTRY

CLASS – XI

SESSION – 2009- 2010

<b>Term – wise</b>	<b>Unit No.</b>	<b>Title</b>	<b>Marks</b>
First – Term	Unit No. I	Some Basic concepts of chemistry	3
First – Term	Unit No. II	Structure of Atom	6
First – Term	Unit No. III	Classification of Elements and periodicity in Properties	4
First – Term	Unit No. IV	Chemical Bonding and Molecular structure	5
First – Term	Unit No. V	States of Matter : Gases and Liquids	4
Second – Term	Unit No. VI	Thermo dynamics	6
Second – Term	Unit No. VII	Equilibrium	6
Second – Term	Unit No. VIII	Redox Reactions	3
Second – Term	Unit No. IX	Hydrogen	3
Second- Term	Unit No. X	S-Block Elements	5
Annual-Term	Unit No. XI	Some P-Block Elements	7
Annual – Term	Units No. XII	Organic Chemistry : Some basic Principles and Techniques	7
Annual – Term	Units No. XIII	Hydro carbons	8
Second – Term	Units No. XIV	Environmental Chemistry	3
<b>Total</b>			<b>70</b>

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Sl.No.	Date	No. of Working days	Unit	Topic and Sub Topics
1.	July – 1-4-2009	04	Unit – I	<b><u>Some Basic – Concepts of Chemistry</u></b> General introduction, importance and scope of chemistry, historical approach to particulate nature of matter, laws of chemical combination : Dalton’s theory : Concept of elements, atoms and molecules.
2.	July 6 – 11 2009 11-7-2009 IInd Saturday	05	Unit – I	<b><u>Some Basic concepts of chemistry</u></b> Atomic and molecular masses, Mole concept and molar mass: percentage composition, empirical and molecular formula, chemical reactions, stoichiometry and calculations based on stoichiometry.
3.	July 13-18 2009	06	Unit – II	<b><u>Structure of Atom</u></b> Discovery of electrons, proton and neutron, Atomic number, isotopes isobars, Thomson’s model and its limitations, Rutherford’s model and its limitations, Bohr model and its limitations, concepts of shells and sub shells, dual nature of matter and light De Broglie relationship, Heisenberg uncertainty principle.
4.	July 20-25 2009	06	Unit – II	<b><u>Structure of Atom</u></b> Concept of orbitals, quantum numbers, shapes of s p & d orbitals rules for filling electrons in orbitals – Aufbau principle, Pauli’s exclusion principle and Hund’s rule, electronic configuration of atoms, stability of half filled and completely filled orbitals.
5.	July 27-30 Aug 1 <sup>st</sup> , 2009 (31 <sup>st</sup> July, 2009 Last working day)	04 01	Unit – III	<b><u>Classification of Elements and periodicity in properties</u></b> 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, ionization enthalpy,

				electron gain enthalpy, electronegativity, valence.
6.	Aug 3-8 2009 08-08-2009 Second Saturday	06	Unit –IV	<b><u>CHEMICAL BONDING AND MOLECULAR STRUCTURE</u></b> Valence electrons, ionic bond, covalent bond, bond parameters, Lewis structure, polar character of covalent bond, covalent character of ionic bond valence bond theory, resonance, geometry of covalent molecules, VSEPR theory.
7.	Aug 10-13 2009 (14-8-09 & 15- 08-09 Holidays)	04	Unit -IV	<b><u>CHEMICAL BONDING AND MOLECULAR STRUCTURE</u></b> Concept of hybridizations, involving, s.p. & d orbitals and shapes of some simple molecules, molecular orbital theory of homonuclear Diatomic molecules (Qualitative idea only) hydrogen bond.
8.	Aug 17-22 2009	06	Unit – V	<b><u>STATES OF MATTER : GASES AND LIQUIDS</u></b> Three states of matter, intermolecular interactions, type of bonding melting and boiling points. Role of gas law in elucidating the concept of the molecules, Boyle's Law, Charles law, Gaylussac law.
9.	Aug 24-29 2009	06	Unit – V	<b><u>STATES OF MATTER : GASES AND LIQUIDS</u></b> Avogadro's law, ideal behavior, empirical derivation of gas equation Avogadro's number, ideal gas equation. Deviation from ideal behaviors liquefaction of gases, critical temperature. Liquid state – vapour pressure, viscosity and surface tension (Qualitative idea only, no mathematical derivation).
10.	Sept 1-5 2009	04	-	<b>REVISION OF UNIT I TO V</b>
11.	Sept 4 2009			<b>C.C.E.P. EXAM (I)</b>
12.	Sept 7-9 2009	03	-	<b>REVISION OF UNIT I TO V</b>

13.	Sept. 10-18 2009			<b>FIRST TERM EXAM</b>
14.	Sept. 19-28 2009			<b>AUTUMN BREAK</b>
15.	So Last working day 2-10-09 holiday Sept 29, 2009 Oct 3, 2009	3		<b>Discussion of first term question paper &amp; preparation of result</b>
16.	Oct 5-10 2009 10-10-2009 Secondary Saturday	5	Unit –Vi	<b><u>THERMO DYNAMICS</u></b> Concept of system, types of systems, surroundings work, heat, energy, extensive and intensive properties, state function first law of thermo dynamics – internal energy and enthalpy, heat capacity and specific heat, measurement of U and H.
17.	Oct 12-17 2009  17-10-2009 Holiday	5	Unit –VI	<b><u>THERMO DYNAMICS</u></b> Hess's law of constant heat summation, enthalpy of bond dissociation, combustion, formation, atomization, sublimation. Phase transformation, ionization and solvation.  Introduction of entropy as a state function, free energy change for spontaneous and non spontaneous processes, criteria for equilibrium.
18.	Oct 19-24 2009	6	Unit - VII	<b><u>EQUILIBRIUM</u></b> Equilibrium in physical and chemical processes dynamic nature of equilibrium, law of mass action equilibrium constant, factors affecting equilibrium Le Chatelier's principal, Ionic equilibrium ionization of acid and bases, strong and weak electrolytes, degree of ionization.
19.	Oct – 26-31 2009 31-10-2009 Last working day	5	Unit –VIII	<b><u>EQUILIBRIUM</u></b> Concept of PH Hydrolysis of salts (elementary idea) Buffer, solution, solubility product common ion effect (with illustrative examples)

20.	Nov. 2-7 2009	5	Unit –VIII	<p><b><u>REDOX REACTIONS</u></b></p> <p>Concept of oxidation and reduction, redox reactions , oxidation number, balancing redox reactions, application of redox reactions.</p>
21.	Nov. 9-14 2009 14-11-2009 Second Saturday	5	Unit – IX	<p><b><u>HYDROGEN (HYDROGEN)</u></b></p> <p>Position of hydrogen in periodic table, occurrence, isotopes preparation, properties and uses of hydrogen: hydrides ionic, covalent and interstitial physical and chemical properties of water, heavy water, hydrogen peroxide – preparation, properties and structure : hydrogen as fuel.</p>
22.	Nov. 16-21 2009	6	Unit-X	<p><b><u>S – BLOCK ELEMENTS (ALKALI AND ALKALINE EARTH METALS)</u></b></p> <p>Group 1 and Group 2 elements :</p> <p>General introductions, electronic configuration occurrence, anomalous properties of the first elements of each group, diagonal relationship, trends in the variation of properties (such as ionization enthalpy, atomic and ionic radii) trends in chemical reactivity with oxygen, water hydrogen and halogens, uses.</p>
23.	Nov 23-30 2009 28-11-2009 Holiday (30-11-2009 Last working day )	5	Unit – X	<p><b><u>S- BLOCK ELEMENTS (ALKALI AND ALKALINE EARTH METALS)</u></b></p> <p>Preparation and properties of some important compounds sodium – carbonate, sodium chloride, sodium hydroxide, and sodium hydrogen carbonates, biological importance of Mg and Ca.</p> <p>Importance of sodium and potassium. CaO, CaCO<sub>3</sub>, and industrial use of lime and Lime stone, biological importance of Mg and Ca.</p>

24.	Dec. 1 – 5 2009	05	Unit –XIV	<b><u>ENVIRONMENTAL CHEMISTRY</u></b> Environmental pollution – air water and soil pollution, chemical reaction in atmosphere smog major atmospheric pollutions acid rain, ozone and its reaction, effects of depletion of ozone layer, green house effect and global warming pollution due to industrial wastes: chemistry as an alternative tool for reducing pollution strategy for control of environmental pollution.
25.	Dec. 7-10 And Dec. 14 2009	04 01		<b>REVISION OF UNIT VI – X AND XIV</b>
26.	Dec. 11 2009  12-12-09 Second Saturday			<b>C.C.E.P. (II)</b>
27.	Dec. 15 To Dec. 22			<b>SECOND TERM EXAMS</b>
28.	Dec. 23, 24 2009	02		<b>DISCUSSION OF SECOND TERM QUESTION PAPER AND RESULT</b>
29.	Dec. 25 to Dec 31, 2009			<b>WINTER BREAK</b>
30.	Jan 1-2 Jan 4-9 2010  (9 – 1 – 2009 Second Saturday)	02 05	Unit X	<b>SOME P – BLOCK ELEMENTS</b> General introduction to p- Block elements <b><u>Group 13, Elements</u></b> ; General introduction, electronic configuration occurrence, variation of properties oxidation state. Trends in chemical reactivity anomalous properties of first element of the group, boron – physical and chemical properties. Some important compounds : Borax Boric acid boron hydrides Aluminum : uses, reactions and acids and alkalies. <b><u>Group 14, Elements:</u></b> General introduction, electronic configuration, occurrence, variation of properties, oxidation state, trends in chemical reactivity.

31.	Jan, 11-16 2010	06	Unit-X  Unit – XII	<p><b>Remaining portion of some P – Block elements :</b> Anomalous behaviour of first element, carbon-catenation allotropic forms, physical and chemical properties : use of some important compound : oxides of carbon. Important compound of silicon and few uses: silicon tetra chloride, silicones, silicates and zeolites.</p> <p><b>ORGANIC CHEMISTRY SOME BASIC PRINCIPLE AND TECHNIQUES</b> General introduction, method qualitative and quantitative analysis, clarification and IUPAC nomenclature of organic compounds.</p>
32.	Jan 18-23 2010	06	Unit – XII	<p><b>ORGANIC CHEMISTRY SOME BASIC PRINCIPLE AND TECHNIQUES</b> Electronic displacements in a covalent bond: inductive effect, electronic effect, resonance and hyper conjugation Homolytic and Hetrolytic fission of a covalent bond: free radicals, carbocations, electrophiles and nucleophiles, types of organic reactions.</p>
33.	Jan 25-31  26 <sup>th</sup> Republic Day & 30-1-2010 Last working day	04	Unit – XIII	<p><b><u>HYDROCARBONS</u></b> Classification of Hydrocarbons Alkanes – Nomenclature, isomerism, conformation (ethane only), physical properties, chemical reactions including free radical mechanism of halogenation, combustion and pyrolysis. Alkenes – Nomenclature, structure of double bond (ethane) geometrical isomerism, physical properties, methods of preparation.</p>
34.	Feb. 1-6 2010	06	Unit-XIII	<p><b><u>HYDROCARBONS</u></b> Alkenes – chemical reactions : addition of hydrogen, halogen, water, hydrogen halides (Markovnikov's addition and peroxide effect), ozonolysis oxidation, mechanism of electrophilic addition. Alkynes – Nomenclature, structure of triple bond (ethyne)</p>

				physical properties and methods of preparation, chemical reactions : acidic character of alkynes addition reactions of hydrogen, halogen, water, hydrogen halides.
35	Feb 8-13-2010 13-2-2010 Second Saturday	05	Unit - XIII	<b><u>HYDROCARBONS</u></b> Aromatic hydrocarbons : Introduction IUPAC nomenclature : Benzene : resonance aromaticity; chemical properties: mechanism of electrophilic substitution – nitration, sulphonation, halogenations, friedel craft's alkylation's and acylation directive influence of functional group in mono substituted benzene, carcinogenicity and toxicity.
36.	Feb – 15-27 2010  27-02-10 Last working Day	05		<b>RIVISON OF UNIT 1 – XIV AND FINAL PRACTICAL EXAMS</b>
37.	01-03-2010 To 16-03-2010			<b>COMMON ANNUAL EXAMS 2010</b>
38.	31-03-2010			<b>ANNOUNCEMENT OF RESULT OF ANNUAL EXAMINATIONS</b>
				<b><u>PREPARED BY:</u></b> 1. KRISHAN KUMAR KAUSHIK I.D. NO. 19820080 GOVT. BOYS SENIOR SECONDARY SCHOOL PUSHP VIHAR SEC – 1, M.B. ROAD NEW DELHI – 17 (SCHOOL I.D. 1923058) 2. MRS. ASHA VIR I.D 19710045 VEER SAVARKAR G.S.K.V. NO.1 KALKAJI NEW DELHI - 17

