SVKM International School, Mumbai
Long Term Plan for CIE AS Level
SCHEME OF WORK
Batch: 2019-21

Teacher: Mr. Manoj Kapoor **Subject: Chemistry**

Week and Month	Topic	Sub topics &Learning Outcomes	Teaching activities / Integration of ICT components	Assessment Summative / formative	Course work / practical component	Resources
JULY (3 Week)	**1. Atoms, molecules and stoichiometry** **2. Atomic structure**	1.2 The mole and the Avogadro constant 1.2 The mole and the Avogadro constant 1.3 The determination of relative atomic masses, Ar 1.4 The calculation of empirical and molecular formulae 1.5 Reacting masses and volumes (of solutions and gases) 2.1 Particles in the atom 2.2 The nucleus of the atom 2.3 Electrons: energy levels, atomic orbitals, ionisation energy, electron affinity	Use of Ppts. Scientific American Research Paper related to Avogadro's No and it's Discovery.	1. Worksheets 2. Class Tests after each of the topics are completed. 3. Solving topics related questions from past papers	**Textbooks** Lainchbury experiment 1.1 **Practical Booklets** 2, 3 **Textbooks** Lainchbury, Experiment 1.3 Hill Practical 1 & 4 Hutchings experiment 52 **Online** http://www.rsc.org/learn-chemistry/resource/res00000697/titratin	http://www.rsc.org/learn-chemistry/resource/res00000401/the-determination-of-relative-atomic-mass Online http://www.s-cool.co.uk/a-level/chemistry (atomic structure) www.rsc.org/learn-chemistry/resource/res00001100/an-anology-for-the-atom Online www.youtube.com/watch?v=m92QR7CBNoQ www.youtube.com/watch?v=PpOAlj7sOEc Online

					g-sodium-hydroxide-with-hydrochloric-acid http://www.rsc.org/learn-chemistry/resource/res00000436/to-find-the-formula-of-hydrated-copper-ii-sulfate	www.chemguide.co.uk (atoms) Past papers Paper 11, June 2013, Q5 Paper 13, June 2013, Q2 Paper 12, June 2012, Q2 Paper 13, Nov 2013, Q31 Paper 23, Nov 2013, Q3 (b)(i) Online www.chemguide.co.uk (atoms) www.youtube.com/watch?v=2AFPfg0Como http://www.kentchemistry.com/links/AtomicStructure/PauliHundsRule.htm Past papers Paper 11, Nov 2011, Q3 Paper 11, Nov 2012, Q2 Paper 11, June 2012, Q1 Paper 12, June 2012, Q4 Paper 12, June 2013, Q31 Paper 13, June 2012, Q2 Paper 13, June 2013, Q32
AUGUST **(4 Weeks)**	**3. Chemical bonding** **4. States of matter**	3.1 Ionic bonding 3.2 Covalent bonding and co-ordinate (dative covalent) bonding including shapes of simple molecules 3.3 Intermolecular forces, electronegativity and bond properties 3.4 Metallic bonding 3.5 Bonding and physical properties 4.1 The gaseous state: ideal and	Use of Ppts for VSEPR Videos related to Chemical Bondings and its applications.	1. Worksheets 2. Class Tests after each of the topics are completed. 3. Solving topics related questions from past papers	Textbooks Lainchbury Experiments 3.4 & 3.5	Past Papers Paper 21, Nov 2013, Q1 (b) Paper 23, Nov 2013, Q1 (a) & Q3 (b)(ii) Paper 41, Nov 2013, Q1 (a) Paper 43, Nov 2013, Q1 (a) Past Papers Paper 11, June 2013, Q33 Paper 21, Nov 2013, Q1 (a)

	5. Chemical energetics	real gases and pV = nRT 4.2 The liquid state 4.3 The solid state: lattice structures 5.1 Enthalpy change, ΔH 5.2 Hess' Law, including Born-Haber cycles				Textbooks Lainchbury Experiment 3.6 Hutchings Experiment 26 Online http://www.rsc.org/learn-chemistry/resource/res00000421/particles-in-motion http://www.rsc.org/learn-chemistry/resource/res00000390/the-energetics-of-freezing
SEPTEMBER (4 Weeks)	**6. Electrochemistry** **7. Equilibria** **8. Reaction kinetics**	6.1 Redox processes: electron transfer and changes in oxidation number (oxidation state) 7.1 Chemical equilibria: reversible reactions, dynamic equilibrium 8.1 Simple rate equations, 8.2 Effect of temperature: on reaction rates and rate constants and the concept of activation energy 8.3 Homogeneous and heterogeneous catalysts including enzymes	Use of Ppts for Electrochemistry. Videos related to Electrolysis and its applications.	1. Worksheets 2. Class Tests after each of the topics are completed. 3. Solving topics related questions from past papers	**Textbooks** Lainchbury, Experiment 3.3 Hill S4 Practical Booklet 4 Textbooks Lainchbury Experiments 2.1,& 2.2 Textbooks Lainchbury Experiment 9.7 Online www.chemguide.co.uk	Past Paper Paper 43, Nov 2013, Q2 (a) Past Paper Paper 43, Nov 2013, Q2 (c)(i) For Redox Practical Booklet 4, 5 Past Papers Paper 11, June 2013, Q1 Paper 13, Nov 2013, Q1 For Equilibrium: Online http://www.rsc.org/learn-chemistry/resource/res00000117/afl-equilibrium-reactions http://www.rsc.org/learn-

					Textbooks Lainchbury Experiment 6.1 Past Papers Paper 13, Nov 2013, Q34 Paper 21, June 2013, Q2 (b)	chemistry/resource/res00000001/cobalt-equilibrium Past Paper Paper 41, Nov 2013, Q3 (b) For Kinetics: Practical Booklet 5 Past Papers Paper 11, June 2013, Q8 Paper 13, Nov 2013, Q5 Past Paper Paper 12, June 2013, Q5 Many examples of questions involving the Boltzmann distribution can be found on past paper variants 1, 11, 12 and 13.
OCTOBER (3 Weeks)	**9. The Periodic Table chemical periodicity** **10. Group 2**	9.1 Periodicity of physical properties of the elements in Period 3 9.2 Periodicity of chemical properties of the elements in Period 3 9.3 Chemical periodicity of other elements 10.1 Similarities and trends in the properties of the Group 2 metals, magnesium to barium, and their compounds 10.2 Some uses of Group 2 compound 11.1 Physical properties of the	Use of Ppts. Videos related to alkali metals and its reactivity .	1. Worksheets 2. Class Tests after each of the topics are completed. 3. Solving topics related questions from past papers		

	11. Group 17	Group 17 elements 11.2 The chemical properties of the elements and their hydrides 11.3 Some reactions of the halide ions 11.4 The reactions of chlorine with aqueous sodium hydroxide 11.5 Some important uses of the halogens and of halogen compounds				
NOVEMBER (3 Weeks)	**13. Nitrogen and sulphur** **14. An introduction to organic chemistry**	13.1 Nitrogen (Ammonia) 13.2 Sulfur: the formation of atmospheric sulfur dioxide, its role in acid rain 14.1 Formulae, functional groups and the naming of organic compounds 14.2 Characteristic organic reactions 14.3 Shapes of organic molecules; σ and π bonds 14.4 Isomerism: structural and stereoisomerism	Use of Ppts. Videos related to Haber's process and its applications.	1. Worksheets 2. Class Tests after each of the topics are completed. 3. Solving topics related questions from past papers		http://www.chemguide.co.uk/basicorg/isomerism/structural.html Past Paper Paper 23, Nov 2013, Q4 (a)(i) Past Papers Paper 11, June 2013, Q20 Paper 13, Nov 2013, Q21 Paper 43, Nov 2013, Q6 (f) Online http://www.rsc.org/learn-chemistry/resource/res00001261/khan-academy-stereochemistry
DECEMBER (4 Weeks)	**15. Hydrocarbons** **16. Halogen derivatives**	15.1 Alkanes 15.2 Alkenes 15.3 Hydrocarbons as fuels 16.1 Halogenoalkanes 16.2 Relative strength of the C–Hal bond	Use of Ppts. Videos related to Fractional Distillations Cracking and its applications.	1. Worksheets 2. Class Tests after each of the topics are completed. 3. Solving topics related	Textbooks Hill Practical 28 Lainchbury Experiments 5.3 & 5.4	Online http://www.rsc.org/learn-chemistry/resource/res00000028/polythene Online http://www.rsc.org/learn-chemistry/resource/res00000283/spectroscopy-in-a-suitcase-ir-student-resources

				questions from past papers		Past Paper Paper 11, June 2013, Q23 Online http://www.rsc.org/learn-chemistry/resource/res00000115/afl-nucleophilic-substitution-reaction-mechanisms Online http://www.rsc.org/learn-chemistry/resource/res00000454/making-a-photographic-print
JANUARY (4 Weeks)	**17. Hydroxy compounds** **18. Carbonyl compounds**	17.1 Alcohols 17.2 Phenol 18.1 Aldehydes and ketones	Use of Ppts. Videos related to Alcohol manufacturing	1. Worksheets 2. Class Tests after each of the topics are completed. 3. Solving topics related questions from past papers		Practical Booklet 6 Textbooks Hill Practical 30 Lainchbury Experiment 8.1 Online http://www.rsc.org/learn-chemistry/resource/res00000463/properties-of-alcohols http://www.rsc.org/learn-chemistry/resource/res00000553/the-oxidation-of-alcohols Past Papers Paper 13, Nov 2013, Q27 Paper 23, Nov 2013, Q5 (c) Online http://www.rsc.org/learn-chemistry/resource/res00000588/three-isomeric-alcohols Past Paper

						Paper 23, Nov 2013, Q5 (b)
FEBRUARY (4 Weeks)	**19. Carboxylic acids and derivatives**	19.1 Carboxylic acids 19.2 Acyl chlorides* 19.3 Esters	Use of Ppts. Videos related to Esters and its application in food Industries.	1. Worksheets 2. Class Tests after each of the topics are completed. 3. Solving topics related questions from past papers		
MARCH (4 Weeks)	**Revision**					
APRIL	**Mock Exams**					
MAY	**Board Exams**					