DEPARTMENT OF CHEMISTRY
SRM UNIVERSITY, KATTANKULATHUR

Lesson Plan 2016-17

Program : BSc 2nd Sem (Chemistry)
Subject : General Chemistry II
Sub Code : UCY15201

Total Hours : 60
Semester : Even (II)
Credits : 4

Unit No. & Title	Topics	Lecture No.	Reference books
Unit 1 Chemical Bonding -1	Introduction to the course, Revision of valence, electronic configuration and overview of different types of bonding.	1	1,2
	Lewis theory and the octet rule	2	1,2
	Exceptions to the octet rule, Effect of bonding and non-bonding electrons on the structure of molecules	3	1,2
	Effect of electronegativity, Isoelectronic principle	4	1,2
	VSEPR theory. Illustration of structures by VSEPR model: $BeCl_2$, $SiCl_4$, PCl_5	5	1,2
	Illustration of structures by VSEPR model: SF_6, IF_7, NH_3, XeF_6, BF_3, H_2O	6	1,2
	Valence Bond theory - Concept of hybridization	7	1,2
	Structure of organic molecules based on sp3, sp2 and sp hybridization	8	1,2,5,6
	Covalent bond properties of organic molecules - bond length, bond angle, bond energy, bond polarity, dipole moment	9,10	1,2,5,6
	Inductive, mesomeric, electromeric, resonance and hyperconjugative effects	11,12	1,2,5,6
Unit II Chemistry Of Groups 1 & 2 Elements	Introduction-group properties	13,14	1,2
	Comparative study of group I A and group II A elements	15,16,17	1,2
	Anomalous behaviour of lithium and beryllium	18,19	1,2
	Extraction of beryllium – diagonal relationship	20,21	1,2
	Potash fertilizers – Preparation of KNO_3	22	1,2
	Preparation of KCl and K_2SO_4.	23,24	1,2
UNIT III - Alkenes And Alkynes	**Alkenes**: Structure - Isomerism - General methods of preparation, dehydrogenation	25	5,6
	dehydrohalogenation, dehydration- Hoffmann and Saytzeff rules	26	5,6
	Reactions- addition of hydrogen, halogen (Mechanism of electrophilic and free radical addition), hydrogen halide (Markownikoff's rule)	27,28	5,6
	hydrogen bromide (peroxide effect), ozonolysis, dihydroxylation with $KMnO_4$ and allylic bromination by NBS	29	5,6
	Dienes: General methods of preparation - mechanism of dehydrohalogenation	30	5,6
	Stability of dienes (conjugated, isolated, allenes and	31	5,6

	cumulenes). Diels-Alder reaction		
	Polymerization - addition polymerization, Ziegler Natta catalysed polymerization.	32	5,6
	Alkynes: Preparation -mechanism of dehydrohalogenation and dehydrogenation	33	5,6
	Acidity of alkynes, formation of acetylides	34	5,6
	Mechanism of addition of water, hydrogen halides and halogens	35	5,6
	Oxidation, ozonolysis, hydroboration and oxidation	36	5,6
UNIT IV - Colloids	Types of colloids – characteristics of true solutions, colloidal solutions and suspensions	37,38	3,4
	Preparation of colloids - purification of colloids – electrodialysis and ultrafiltration	39,40	3,4
	Properties of colloids - the origin of charge on colloidal particles, the electrical double layer- Zeta potential	41,42,43	3,4
	Electro-osmosis – Electrophoresis, coagulation of colloids, Hardy- Schulze rule and its exception	44,45,46	3,4
	Gold number - protective colloids, applications of colloids	47,48	3,4
UNIT V - Gaseous State	Gaseous state – Laws of gaseous state- gas constant R in different units	49,50,51	3,4
	Deviation from ideal behaviour – Van der waals equation for real gases	52,53,54	3,4
	critical phenomenon – PV isotherm of real gases, critical temperature – critical volume	55,56,57	3,4
	Molecular velocities – root mean square, average and most probable velocities. Maxwell distribution law – collision number and mean free path – collision diameter	58,59,60	3,4

Textbooks

1. Puri B.R..,Sharma L.R., Kalia K.K., Principles of Inorganic Chemistry, (23rd edition), New Delhi, Shoban Lal Nagin Chand & Co., (1993).
2. Lee J.D., Concise of Inorganic Chemistry, UK, Black well science (2006).
3. Puri B.R..,Sharma L.R., Pathania M.S., Principles of Physical Chemistry, (23rd edition), New Delhi, Shoban Lal Nagin Chand & Co., (1993).
4. Glasstone S., Lewis D., Elements of Physical Chemistry, London, Mac Millan & Co. Ltd.
5. Morrison R.T. and Boyd R.N., Organic Chemistry (6th edition), New Delhi, Prentice-Hall Inc., 1992.
6. Bahl B.S. and Arun Bahl, Advanced Organic Chemistry, (12th edition), New Delhi, Sultan Chand & Co., (1997).

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HOD/Chemistry 9/12/16