

DEPARTMENT OF CHEMISTRY
SRM UNIVERSITY
KATTANKULATHUR

LESSON PLAN
Academic year 2016 – 17

Program : II Year B.Sc.,
Subject Title : General Chemistry - IV
Subject Code : UCY15401

Total No. of hours: 60
Semester : IV

Unit no.& title	Topics	Lec No	Reference books
UNIT III ALKYL AND ARYL HALIDES	Classification and Nomenclature of alkyl halide.	1	(i) Morrison R.T., and Boyd R.N., (1976): Organic Chemistry, 6th edition Allyn & Bacon Ltd, New York. (ii) Organic chemistry (Paula Yurkanis Bruice) (iii) A text book of organic Chemistry, Arun Bahl, B.S. Bahl.
	General methods of preparation of alkyl halide (F, Cl, Br & I).	2	
	Chemical Properties of alkyl halide.	3	
	Properties and Uses of alkyl halide.	4	
	Aliphatic Uni nucleophilic substitution reaction in tertiary aliphatic halides. Mechanisms and stereo chemical outcome (S_N1).	5	
	Aliphatic bimolecular nucleophilic substitution reaction in primary aliphatic halides. Mechanisms stereo chemical outcome (S_N2).	6	
	Aliphatic nucleophilic substitution internal in halogenation reaction of alcohol using thionyl chloride (S_Ni).	7	
	General methods of preparation of halobenzenes. (Fluoro, Chloro, Bromo, and Iodo benzene).	8	

UNIT III ALKYL AND ARYL HALIDES	Chemical Properties and uses of halo-benzenes.	9	(i) Morrison R.T., and Boyd R.N., (1976): Organic Chemistry, 6th edition Allyn & Bacon Ltd, New York. (ii) Organic chemistry (Paula Yurkanis Bruice) (iii) A text book of organic Chemistry, Arun Bahl, B.S. Bahl.
	Physical Properties and uses of halobenzenes.	10	
	Mechanism of Aromatic electrophilic substitution reactions in chlorobenzene.	11	
	Mechanism of Aromatic nucleophilic substitution reactions in activated halo-benzene (<i>ortho</i> or <i>para</i> -chloro nitro-benzene).	12	
UNIT IV - ALDEHYDES AND KETONES	Nomenclature of aliphatic carbonyl compounds (aldehyde and ketone).	13	
	Laboratory preparation of aliphatic carbonyl compounds (aldehyde and ketone).	14	
	Chemical properties of aliphatic carbonyl compounds (aldehyde and ketone).	15	
	Physical properties and uses of aliphatic carbonyl compounds (aldehyde and ketone). Nucleophilic addition mechanism at carbonyl group.	16	
	Condensation reactions (aldol and mix aldol condensation reaction). Acidity of alpha-hydrogen. Beckmann rearrangement. Molecular orbital picture of carbonyl group.	17	
	General methods of preparation of aromatic carbonyl compounds (aldehyde and ketone).	18	

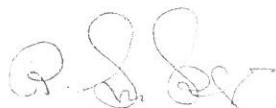
UNIT IV - ALDEHYDES AND KETONES	Chemical properties of aromatic carbonyl compounds (aldehyde and ketone).	19	(i) Morrison R.T., and Boyd R.N., (1976): Organic Chemistry, 6th edition Allyn & Bacon Ltd, New York. (ii) Organic chemistry (Paula Yurkanis Bruice) (iii) A text book of organic Chemistry, Arun Bahl, B.S. Bahl.
	Chemical properties of aromatic carbonyl compounds (aldehyde and ketone).	20	
	Physical properties of aromatic carbonyl compounds (aldehyde and ketone) and uses.	21	
	effect of aryl group on the reactivity of carbonyl group- Perkin reaction.	22	
	Knovenegal and Cannizzarro reaction condensation reaction. Questions and Answers.	22	
	Class test before CT-I.	24	
UNIT I - CHEMICAL BONDING	Ionic bond Properties of ionic compounds.	25	Puri B.R., Sharma L.R., Kalia K.K., (1993): Principles of Inorganic Chemistry, 23rd edition, Shoban Lal Nagin Chand & Co. New Delhi. Lee J.D., (2006): Concise Inorganic Chemistry, Black well science, UK
	Factors favoring the formation of ionic compounds. ionization potential.	26	
	Electron affinity and Electronegativity.	27	
	Lattice Energy – Born – Haber Cycle – enthalpy of formation of ionic compound and stability.	28	
	Polarizing power and Polarisability – partial ionic character from electro negativity.	29	
	Transitions from ionic to covalent character and vice versa.	30	

UNIT I - CHEMICAL BONDING	Fajan's rule - effects of polarization on solubility, melting points and thermal stability of typical ionic compounds.	31	Puri B.R., Sharma L.R., Kalia K.K., (1993): Principles of Inorganic Chemistry, 23rd edition, Shoban Lal Nagin Chand & Co. New Delhi. Lee J.D... (2006): Concise Inorganic Chemistry, Black well Science, UK
	Molecular orbital theory (MO), LCAO method, criteria of orbital overlap, types of molecular orbitals- sigma and π .	32	
	MO energy level diagram for homo diatomic molecules- H_2 and N_2 , Bond order and stability of molecules,	33	
	MO energy level diagram for hetero diatomic molecules- CO, NO, HCl. Bond order and stability of molecules.	34	
	MO energy level diagram for hetero diatomic molecules- CO, NO, HCl. Bond order and stability of molecules.	35	
	Difference between VB theory and MO theory.	36	
UNIT II - CHEMISTRY OF ELEMENTS OF GROUP 16	Paramagnetic nature of oxygen- by MO theory	37	
	Preparation, properties, structure and uses of oxyacids of sulphur.	38	
	Preparation, properties, structure and uses of oxyacids of Sulphur.	39	
	Preparation, properties, structure and uses of oxyacids of Sulphur	40	
	Classification of oxides based on their chemical behavior.	41	


UNIT II - CHEMISTRY OF ELEMENTS OF GROUP 16	Classification of oxides based on their chemical behavior.	42	Puri B.R., Sharma L.R., Kalia K.K., (1993): Principles of Inorganic Chemistry, 23rd edition, Shoban Lal Nagin Chand & Co, New Delhi.
	Acidic oxide.	43	
	Amphoteric oxide and neutral oxides.	44	
	Peroxides and super oxides	45	
	Dioxides, sub oxides and mixed oxides.	46	
	Questions and answers.	47	
	Class test before Cycle test (CT2)	48	
UNIT V - THERMODYNAMICS II	Limitations of first law and the need for the second law.	49	Puri B.R., Sharma L.R., Pathania M.S., (1993): Principles of Physical Chemistry, 23rd edition, Shoban Lal Nagin Chand & Co, New Delhi.
	Heat engine – Carnot's cycle and its efficiency.	50	
	Thermodynamic principle of the working of refrigerator.	51	
	Thermodynamic scale of temperature.	52	
	Entropy as a state function.	53	
	Entropy as a function of Pressure, Volume and Temperature.	54	
	Entropy change in phase change.	55	
	Entropy of mixing.	56	
	Entropy as a criterion of spontaneous.	57	
	Equilibrium processes in isolated systems.	58	
	Questions and Answers	59	
	Class test before model test.	60	

STAFF DETAILS

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HOD/Chemistry

5/1/18