FM/CD/01
Rev : 00

Teaching Plan
Academic Year 2015-2016

Class :B.Sc. **Semester :**III
Subject : Chemistry **Paper No. :** IX
Periods per weeks : Th. 3Pract. 6 **Test (Date) :** _____
Weeks (Total) : **Tutorial (Date) :** _____

WEEKS	TOPICS TO BE COVERED
1	**1) Alcohols**: Definition: *MonohydricAlcohols***:** Methods of Formation by reduction of Aldehydes, Ketones, Carboxylic Acids and Esters (One eg.each)Acidic Nature, Reactions of Alcohols.
2	*DihydricAlcohols*: Method of Formation of Ethylene Glycol-industrial method and From Alkene using OsO_4, Chemical Reactions of Ethylene Glycol-nitration
3	Acylation, Oxidation (Using $Pb(OAc)_4$ without Mechanism Pinacol-Pinacolone rearrangement,*TrihydricAlcohols:* Preparation of Glycerol from propane, Reactions of Glycerol
4	**2) Phenols**: Preparation of Phenol from Chlorobenzene, Cumene and Benzene Sulphonic Acid, Physical properties, Acidic Nature of Phenol, Resonance stabilization of Phenoxide Ion.Reactions of Phenols- Electrophilic Aromatic Substitution
5	Acylation, Carboxylation (Without Mechanism) Reactions with Mechanism-intramolecular Fries RearrangementClaisen Rearrangement, Gatterman Synthesis and Reimer Tiemann Reaction
6	**3) Aldehydes and Ketones:** *Aldehydes*: Preparation of Aldehydes from Acid Chloride, Gattermann-Koch synthesis *Ketones*- Preparation from nitriles and from Carboxylic Acid, Physical Properties of Aldehydes and Ketones
7	Mechanism of Nucleophilic Additions to Carbonyl Group with particular emphasis on Benzoin Aldol, Knoenenagel condensations, Mannich Reactions
8	Use of Acetals as Protecting Group Oxidation of Aldehydes using Chromium Trioxide, Baeyer-Villeger Oxidation of Ketones **4) Carboxylic Acids**: Acidity of Carboxylic Acids, Effects of substituents on Acid strength, preparation of Acetic Acid from CO_2 from Nitriles, from Acid Chloride, Anhydride, Ester and Amide.Physical
9	Properties and reactions of CarboxylicAcids-Synthesis of Acid Chloride, Ester and Amide, Hell-Volhard-Zelinsky Reaction. Reduction using $LiAlH_4$,
10	Mechanism of Decarboxylation, Hydroxyl Acids- Malic, Tartaric and Citric Acid. Methods of Formation and Chemical reactions of Acrylic Acid
11	Organic Compounds of Nitrogen: 14 Hrs. Preparation of Nitroalkanes. Nitration of Benzene and Their Reduction in Acidic, Neutral and Basic Media. Amines-Basicity of
12	Amines, Amine Salt as PTC. Preparation of Alkyl and Aryl Amines (Reduction of Nitro Compounds', Nitriles) Reductive Amination, Hoffmann Bromamide Reactions.
13	Reactions of Amines-Electrophilic Aromatic Substitution in Aryl amines, Reactions of Amines with Nitrous Acid
14	Term exam
15	Terminal exam ,.

Dr. Pathan Arif

Teacher's Signature : **H.O.D.'s Signature**

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Teaching Plan
Academic Year 2015-2016

Class **BSc. T Y** **Semester:** **III sem**
Subject: Physical Chemistry **Paper No:**

Periods per weeks: Th. __ Pract. ____ **Test (Date): _____**

Weeks (Total) : 15 **Tutorial (Date):_____**

WEEKS	TOPICS TO BE COVERED
1	1) Thermodynamics: I 15 Hrs. Definition: of Thermodynamic Terms: System, Surrounding types of system, intensive and extensive properties. Thermodynamic Process, Concept of heat and work
2	Work done in reversible and irreversible process, concept of maximum work (Wmax), Numerical Problems. First law of Thermodynamics: Statement, Definition of Internal energy and Enthalpy.
3	Heat capacity, heat capacities at constant volume pressure and their relationship. Calculation of W,q, du and dH for the expansion of ideal gases under isothermal and adiabatic conditions for reversible process
4	Numerical problems, Hess's law of heat Summation and its application.
5	2). Thermodynamic-II: 20 Hrs. Second Law of Thermodynamics: Need for the law, different statement of the law Carnot Cycle and its efficiency, Numerical Problems
6	Carnot Theorem. Concept of Entropy: Definition, Physical significance, Entropy as a State Function, Entropy change in Physical change,
7	Entropy as criteria of Spontaneity & Equilibrium Entropy Change in Ideal Gases.
8	Gibbs and Helmholtz Functions: Gibbs Function (G) and Helmoltz Function (A) as Thermodynamic Quantities
9	A and G as criteria for Thermodynamic Equilibrium and Spontaneity,
10	Advantage over Entropy change. Variation A with P, V and T
11	3) Chemical Equilibrium: 10 Hrs. Equilibrium Constant and Free Energy. Thermodynamic Derivation of Law of Mass Action
12	Le Chatelier's Principle. Reaction Isotherm and Reaction Isochore.

13	Clapeyron Equation, Clausius-Clapeyron Equation and its Application
14	**Revision**
15	**Revision**

Dr. Mohd Asif
Teacher's Signature **H.O.D.'s Signature**