Teaching Plan
Academic Year 2014-15

Class : B.Sc III year **Semester: V**
Subject : Physical Chemistry **Paper No: XI**
Periods/ week: Th. Pract. **Test** (Date):_____
Weeks (Total): 15 **Tutorial**
(Date):_____

Week	Topic to be Covered
1	**I Elementary Quantum Mechanics:** Black body radiation, Planck's radiation law, photoelectric effect,
2	Bohr's modes of hydrogen atom and its defects. Compton effect. De Broglie Hypothesis, the Heisenberg's uncertainty principles,
3	Harmiltonian operator, Schrödinger wave equation and its importance. Physical interpretation of the wave function, postulates of quantum mechanics
4	Schrödinger wave equation for H-atom, separation into three equations , Quantum numbers and their importance.
5	**II Spectroscopy:** Electromagnetic radiation, regions of the spectrum, basic features of different spectrometers. statement of the born-oppenheimer approximation
6	Rotational Spectrum - Diatomic molecules, energy levels of a rigid rotor (semi classical principles),
7	selection rule,rotational spectra of rigid diatomic molecule, determination of bond length, numerical problems. **III Photochemistry:** Introduction of radiation with matter,
8	difference between thermal and photochemical processes. Laws of photochemistry, Grothus - Drapper law, Stark-Einstein law
9	Jablonsiki diagram qualitative description of fluorescence, phosphorescence, non-radiative processes (Internal conversion, Intersystem crossing),
10	Quantum yield, photosensitized reactions. **IV Physical properties and molecular structure:** Optical activity and its measurement
11	Dipole moment and its measurement by temperature change method Magnetic property and its measurement by Guoy balance method.

12	Applications of optical activity, dipole moment and magnetic property for determination of structure of molecule.
13	**V Nano Material:** Introduction to nano-materials Methods of Synthesis - i) High energy ball milling, ii) Physical vapour deposition PVD)
14	iii) Chemical vapour deposition (CVD) iv) Micro emulsion. Synthesis using micro-organisms and plant extract.
15	Revision and test

Dr. Mrs. Syed Ummul Khair Asema

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

FM/CD/01
Rev : 00

Teaching Plan
Academic Year 2015-2016

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

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

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

WEEKS	TOPICS TO BE COVERED
1	Fats, oils and detergents 08 Hrs. Natural fats, edible and industrial oils of vegetable origin, manufacture of soyabean oil by solvent extraction method and isolation and uses of essential oils.
2	Types of animals fats and oils and defination of saponification value, iodine value, and acid value. Detergents: Defination, Introduction and preparation of sodium alkyl sulphonate, alkyl benzene sulphonate, and amide sulphonate, (one example each), Cleansing action of detergent
3	Organometallic Compounds 08 Hrs. Organomagnesium compounds: The Grignard reagent formation, structure and chemical reactions.
4	Organozinc compound, formation and chemical reactions organolithium compound, formation and chemical reactions
5	Organic Synthesis via Enolates. 13 Hrs. Defination, Active methylene compounds, Preparation of Aceto acetic ester,
6	(Claisen condensation with Mechanism), Acidity of alpha hydrogen, properties and
7	reactions involving formation of mono, di and unsaturated carboxylic acids
8	also synthesis of ketone, di ketone, 4-methyl uracil from acetoacetic ester, keto-enol tautomerism. Preparation of diethyl malonate, properties and
9	reactions involved in alkylation, formation of mono, di and unsaturatedcarboxylic acids, and also synthesis of glycine and barbutric acids from diethyl malonate
10	Spectroscopy 16 Hrs. Nuclear magnetic resonance (NMR) spectroscopy. Proton magnetic resonance (1H NMR) spectroscopy, nuclear shielding and deshielding
11	chemical shift and molecular structure, spin-spin splitting and coupling constants, areas of signals
12	interpretation of PMR spectra of simple organic molecules such as ethyl bromide, ethanol, acetaldehyde, 1, 2, 2 tribromoethane, ethyl acetate, toluene and Acetophenone. Problems pertaining to the structure elucidation of simple organic compounds using UV, IR and PMR spectroscopic techniques

13	(Combine and single λ max using woodwordfischer rule)
14	**Revision**
15	**Revision**

Sayyad Sultan

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