**Teaching Plan**

**Academic Year 2015-16**

Class : **B.Sc. First Year** Semester :**II$^{nd}$Sem**

Subject :**Inorganic Chemistry** Paper :**V**

Periods/ Week Theory **: 06/ Week** Practical :

Weeks (Total ) :**90**

| Week | Topics To Be Covered |
|---|---|
| 1 | **1. Chemistry of Noble gases**<br>Introduction : Electronic Configuration ,Occurrence , Compounds Of Xenon, $XeF_2$, $XeF_4$ , $XeF_6$,XeOF4 , $XeO_2F_2$ |
| 2 | Preparations of Xenon Compounds and Structure and Bonding in them. |
| 3 | **2. Chemical Bonding :**<br>Introduction , Valence Bond Theory (VBT), Molecular Orbital Theory( MOT) ,Examples, Limitations, Application to Homoatomic and Heteroatomic Molecules |
| 4 | MOT of CO, and NOMolecules **,**Bond Strength and Bond Energy<br>Hybridisation , Definition ,Types , sp,$sp^2$,$sp^3$,$sp^3d$ ,$sp^3d^2$,$sp^3d^3$ ,shapes of inorganic molecules and ions |
| 5 | Valence Shell Electronic Pair Repulsion Theory (VSEPR),application to $NH_3$,$SF_4$,$ClF_3$ ,$ICl_2$<br>Bond Strength , Bond Energy and Bond Order |
| 6 | Ionic Bonds Definition and Factors affecting ionic bonds **,** Hydrogen Bonding , Vander-Waals Forces |
| 7 | **Nuclear Chemistry :**<br>Definition, Atomic No, Mass No., Isotopes ,Isobar ,Mass Defect and Binding Energy, Packing Fraction |
| 8 | Properties of alpha ,beta and gamma particles , Artificial Transmutation ,Application w.r.t Trans uranic Elements |
| 9 | **Theory of Volumetric Analysis :**<br>Definition, Types of Titrations Volumetric Apparatus, Calibration of Burette and Pipette, Indicators used in $P^H$ Titrations, Oxidising agents used in indicators |
| 10 | Oxidising agents ased in indicators, Theory of External, Internal and Self Indicators |

# Teaching Plan
# Academic Year 2015-16

Class: B.Sc. I
Subject: Physical Chemistry
Periods/week: Theory
Weeks (Total): 15

Semester: II
Paper No: IV
Test (Date):
Tutorial (Date):

| Week | Topic to be Covered |
|---|---|
| 1 | Chemical bonding: Covalent Bond |
| 2 | Chemical bonding: Molecular Orbital Theory |
| 3 | Chemical bonding: VSEPR Theory |
| 4 | Chemical bonding: Ionic Bond |
| 5 | Chemical bonding: Hydrogen Bonding |
| 6 | Chemical Kinetics: Scope, rate of reaction factors affecting rate of reaction, deviation of rate law, Zero order reaction. |
| 7 | Chemical Kinetics: First, second, pseudo order, half life, effect of temp. on rate of reaction. Arrhenius equation, concept of activation energy |
| 8 | Catalysis |
| 9 | Liquid State: Intermolecular forces, Structure of liquids |
| 10 | Liquid State: Difference between solids, gases and liquids |
| 11 | Liquid State: Liquid crystals |
| 12 | Solid State: Types of solids |
| 13 | Solid State: Law of crystallography |
| 14 | Solid State: Symmetry elements in crystals |
| 15 | Solid State: X-ray diffraction by crystals, Deviation of Bragg equation. |

Teachers Signature

Dr PrashantNetankar

HOD'S Signature