**Lesson Plan (Odd Semester) Session 2022-23**

Name of the Assistant Professor:- Parveen Kumar

B. Sc. Ist Year (Ist Semester)

Paper II (Theory) Physical Chemistry CH-102

Subject:-Chemistry

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| Sr. No. | Period | **Topics to be covered** | Topic of Assignments / Tests to be given to the students |
| 1 | 22/08/22-31/08/22 | **Gaseous states:** kinetic molecular theory of gases, Maxwell’s distribution of velocities and energies (derivation excluded), calculation of root mean square velocity, average velocity and most probable velocity, collision diameter, collision number, collision frequency and mean free path (derivation excluded), derivation of real gases from ideal behavior, derivation of Vander Waal’s equation of state, its application in the calculation of Boyle’s temperature (compression factor) | Assignment |
| 2 | 01/09/22-30/09/22 | Critical temperature, Critical pressure, Critical volume and their determination, PV isotherms of real gases, continuity of states, the isotherm of Vander Waal’s equation, relationship between critical constants and Vander Waal’s constants, critical compressibility factor, The Law of corresponding states | Test of Gaseous states |
| 3 | 01/10/22-31/10/22 | **Liquid states:** structure of liquids, properties of liquids- surface tension, refractive index, viscosity, vapour pressure and optical rotation | Assignment |
| 4 | 01/11/22-30/11/22 | **Solid state**: classification of solids, Law of constancy of interfacial angles, Law of rational indices, Miller indices, elementary ideas of symmetry and symmetry elements, Seven crystal system and fourteen Bravais lattices | test |
| 5 | 01/12/22 to till exam | **Revision** |  |

(Mr. Parveen Kumar)

**Lesson Plan (Odd Semester) Session 2022-23**

Name of the Assistant Professor:- Mr. Parveen Kumar

B. Sc. 2nd Year (3rd Semester)

Paper VIII (Theory) Inorganic Chemistry CH-201

Subject:-Chemistry

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| Sr. No. | Period | **Topics to be covered** | Topic of Assignments / Tests to be given to the students |
| 1 | 22/08/22-31/08/22 | **Chemistry of Elements of Ist transition series:** Definition of transition elements, position in the periodic table, General characteristics & properites of Ist transition elements,. Structures & properties of some compounds of transition elements – TiO2, VOCl 2 , FeCl 3 , CuCl 2 and Ni (CO)4 |  |
| 2 | 01/09/22-30/09/22 | **Chemistry of Elements of IInd & IIIrd transition series:** General characteristics and properties of the IInd and IIIrd transition elements Comparison of properties of 3d elements with 4d & 5d elements with reference only to ionic radii, oxidation state, magnetic and Spectral properties and stereochemistry | Assignment |
| 3 | 01/10/22-31/10/22 | **Coordination Compounds:** Werner’s theory of Coordination Compounds, effective atomic number, chelates, nomenclature of Coordination Compounds, Isomerism in Coordination Compounds, valence bond theory of transition metal complexes | Test |
| 4 | 01/11/22-30/11/22 | **Non-aqueous solvents:** physical properities of the solvents, types of solvents and their general characteristics, reactions in Non-aqueoussolvents with reference to liquid NH3 and liquid SO2 | Test |
| 5 | 01/12/22 to till exam | **Revision** |  |

(Mr. Parveen Kumar)

**Lesson Plan (Odd Semester) Session 2022-23**

Name of the Assistant Professor:- Mr. Parveen Kumar

B. Sc. III Year (Vth Semester)

Paper XV (Theory) Inorganic Chemistry CH-301

Subject:-Chemistry

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| Sr. No. | Period | **Topics to be covered** | Topic of Assignments / Tests to be given to the students |
| 1 | 22/08/22-31/08/22 | **Metal-ligand Bonding in Transition Metal Complexes** Limitations of valence bond theory, an elementary idea of crystal-field theory, crystal field splitting in octahedral, tetrahedral and square planar complexes, factors affecting the crystal-field parameters. |  |
| 2 | 01/09/22-30/09/22 | **Thermodynamic and Kinetic Aspects of Metal Complexes:** A brief outline of thermodynamic stability of metal complexes and factors affecting the stability, substitution reactions of square planar complexes of Pt(II). | Assignment |
| 3 | 01/10/22-31/10/22 | **Magnetic Properties of Transition Metal Complexes:** Types of magnetic behaviour, methods of determining magnetic susceptibility, spin-only formula. L-S coupling, correlation of µs and µeff values, orbital contribution to magnetic moments, application of magnetic moment data for 3dmetal complexe | Test |
| 4 | 01/11/22-30/11/22 | **Electron Spectra of Transition Metal Complexes:** Types of electronic transitions, selection rules for d-d transitions, spectroscopic ground states, spectrochemical series. Orgel-energy level diagram for d1 and d 9 states, discussion of the electronic spectrum of [Ti(H2O) 6 ] 3+ complex ion. | Test |
| 5 | 01/12/22 to till exam | **Revision** |  |

(Mr. Parveen Kumar)