Name of Faculty: Dr. Priyanka Dhankhar

Semester: 1st year (ME+ECE+AI-ML)

Subject: Chemistry I (Theory)

Code: BSE-CHE-101H

Sr. No.	Lecture No.	Description of Topic
1st week	1	**Unit 1** Effective nuclear charge, penetration, screening effect
	2	Electronic configuration, atomic sizes, ionization energy,
	3	Variation of s, p, d and f orbital, polarizability, oxidation state
	4	Revision
2nd week	5	Electron affinity, electronegativity
	6	Atomic and Molecular Structure: Equations for atomic and molecular orbitals
	7	Energy level diagrams of diatomic molecules
	8	Revision
3rd week	9	Molecular orbitals of diatomic molecules of N2, O2, CO
	10	Pi-molecular orbitals of butadiene, benzene and aromaticity
	11	Crystal field theory
	12	Revision
4th week	13	Band structure of solids and doping
	14	**Unit II** Stereochemistry Introduction
	15	Representations of 3 dimensional structures
	16	Revision
5th week	17	structural isomers, stereoisomers: geometrical and optical isomerism
	18	Configurations and symmetry
	19	Chirality, enantiomers, diastereomers, optical activity
	20	Revision
6th week	21	Absolute configurations and Relative configuration conformational analysis of ethane
	22	conformational analysis of ethane and butane
	23	Organic reactions and synthesis of Drug: Introduction to organic reactions
	24	Revision
7th week	25	Substitution reaction and mechanism
	26	Addition reaction and mechanism

	27	Elimination, oxidation reaction
	28	Revision
8th week	29	Reduction, cyclization and ring openings.
	30	Synthesis of a commonly used drug molecule (paracetamol and Aspirin)
	31	Unit III intermolecular forces: ionic, dipolar and van der waals interactions
	32	Revision
9th week	33	Equation of state of real gases and critical phenomenon
	34	Water chemistry and corrosion: introduction
	35	Measurement of hardness by EDTA method
	36	Revision
10th week	37	Corrosion: introduction
	38	Factor affecting corrosion
	39	Methods of prevention
	40	Revision
11th week	41	Basic of spectroscopy
	42	Principle of UV-visible spectroscopy
	43	Applications of UV-visible spectroscopy
	44	Revision
12th week	45	Principle of IR spectroscopy
	46	Applications of UV-visible spectroscopy
	47	Nuclear magnetic resonance
	48	Revision
13th week	49	Magnetic resonance imaging
	50	Elementary discussion on Flame photometry
	51	Flame photometry
	52	Revision
14th week	53	Revision
	54	Revision
	55	Revision
	56	Revision