

Course Outcomes & Lesson Plan & Syllabus

Subject: Engineering Chemistry (B24-BSC -114, 1st / 2nd Sem)

B24-BSC-114 Engineering Chemistry (B24-BSC-114)

- CO 1 An insight into atomic and molecular orbitals and bonding in molecules.
- CO 2 Knowledge of basic concepts of spectroscopic techniques for identification of molecules.
- CO 3 To understand basic concept of thermodynamics and phase equilibria.
- CO 4 To understand nature of corrosion and its preventive measures

Lesson Plan

Name of the Faculty:			Dr. Niti Sakhuja	
Discipline:			B.Tech	
Semester:			1 st /2 nd	
Subject:			Engg Chemistry-B24-BSC-114	
Work Load (Lecture/Practical) per week (In hours):			Lecture-4/Practical-2	
S.No	Lecture	Theory		

	No.	Topic (Including Assignment/Test/Quiz)	Pedagogy (PPT/Marker/Video Recording /Activity/Case Study)	Course Outcome
2.	L 1	Molecular orbitals of diatomic molecules (N ₂ , F ₂ O ₂ , CO)	Marker Board & PPT	CO 1 & CO 2
3.	L 2	Equations for atomic and molecular orbitals.	Marker Board & PPT	CO 1 & CO 2
4.	L 3	Energy level diagrams of diatomics.	Marker Board & PPT	CO 1 & CO 2
5.	L 4	Pi-molecular orbitals of benzene & butadiene	Marker Board & PPT	CO 1 & CO 2
7.	L 5	Aromaticity and Huckel Rule	Marker Board & PPT	CO 1 & CO 2
8.	L 6	Crystal field theory, its postulates	Marker Board & PPT	CO 1 & CO 2
9.	L 7	Energy level diagrams of [Co(NH ₃) ₆] ³⁺ , [Ni(CO) ₄], [PtCl ₂ (NH ₃) ₂]	Marker Board & PPT	CO 1 & CO 2
10.	L 8	Magnetic properties of metal complexes	Marker Board & PPT	CO 1 & CO 2
11.	L 9	Band structure of solids	Marker Board & PPT	CO 1 & CO 2
12.	L 10	Role of doping on band structures.	Marker Board & PPT	CO 1 & CO 2
10.		Assignment1	On Paper (Hard Copy)	

11.	L 11	Spectroscopic techniques and applications	Marker Board & PPT	CO 1 & CO 2
12.	L 12	Principles of spectroscopy	Marker Board & PPT	CO 1 & CO 2
13.	L 13	Selection rules	Marker Board & PPT	CO 1 & CO 2
14.	L 14	Electronic spectroscopy (basic concept).	Marker Board & PPT	CO 1 & CO 2
15.	L 15	Fluorescence & Phosphorescence	Marker Board & PPT	CO 1 & CO 2
16.	L 16	Applications of fluorescence in medicine	Marker Board & PPT	CO 1 & CO 2
17.	L 17	Vibrational spectroscopy of diatomic molecules	Marker Board & PPT	CO 1 & CO 2
18.	L 18	Rotational spectroscopy of diatomic molecules	Marker Board & PPT	CO 1 & CO 2
19.	L 19	Applications of Vibrational spectroscopy and Rotational spectroscopy	Marker Board & PPT	CO 1 & CO 2
20.	L 20	Basic concepts of Nuclear magnetic resonance	Marker Board & PPT	CO 1 & CO 2
21.	L 21	Magnetic resonance imaging,	Marker Board & PPT	CO 1 & CO 2
22.	L 22	Diffraction & Scattering	Marker Board & PPT	CO 1 & CO 2
20.		Test 1	On Paper (Hard Copy)	

21.	L 23	Use of free energy in chemical equilibria	Marker	CO 3 & CO 4
23.	L 24	Estimations of entropy	Marker	CO 3 & CO 4
24.	L 25	Estimations of free energy	Marker	CO 3 & CO 4
25.	L 26	Free energy and emf.	Marker	CO 3 & CO 4
26.	L 27	Cell potentials & applications.	Marker	CO 3 & CO 4
27.	L 28	Nernst Equation & its applications	Marker	CO 3 & CO 4
29.	L 29	Define Terms Phase, component, degree of freedom	Marker Board & PPT	CO 3 & CO 4
30.	L 30	One Component System -Water	Marker Board & PPT	CO 3 & CO 4
31.	L 31	Two Component System- Lead Silver	Marker Board & PPT	CO 3 & CO 4
32.	L 32	Derivation of Phase Rule Equation	Marker Board & PPT	CO 3 & CO 4
33.	L 33	Application of Phase Equilibria	Marker Board & PPT	CO 3 & CO 4

34.	L 34	Corrosion derivation	Marker Board & PPT	CO 3 & CO 4
35.	L 35	Introduction of Galvanic Cells, Types of Galvanic Cells	Marker Board & PPT	CO 3 & CO 4
36.	L 36	Cell Potentials	Marker Board & PPT	CO 3 & CO 4
32.		Assignment 2	On Paper (Hard Copy)	
33.	L 37	Nernst Equation & its applications	Marker Board & PPT	CO 3 & CO 4
34.	L 38	Types of Corrosion (Dry & Wet)	Marker Board & PPT	CO 3 & CO 4
35.	L 39	Bimettalic , Pitting Corossion	Marker Board & PPT	CO 3 & CO 4
36.	L 40	Differential Aeration Corossion, Water line Corossion, stress corossion	Marker Board & PPT	CO 3 & CO 4
37.	L 41	Factors Affecting Corossion	Marker Board & PPT	CO 3 & CO 4
38.	L 42	Preventive measures of Corossion	Marker Board & PPT	CO 3 & CO 4
39.	L 43	Anodic Protection	Marker Board & PPT	CO 3 & CO 4

40.	L 44	Cathodic Protection	Marker Board & PPT	CO 3 & CO 4
41.	L 45	Protective Coatings	Marker Board	CO 3 & CO 4
42.		Test 2	On Paper (Hard Copy)	