

Bhoj Reddy Engineering College for Women: Hyderabad

Faculty of Chemistry

Lesson plan of faculty member for the academic year 2018–19

Class: I B Tech

Branch-Section: ECE-A

Semester: II

Subject: Chemistry

Lectures per week: 3+1 (Tutorial)

Lecture Number	Topic to be covered	Date (s)
Unit - I: Molecular Structure and Theories of Bonding		
1.	Atomic and Molecular Orbitals	03 January 2019
2.	Linear Combination of Atomic Orbitals (LCAO), Molecular orbitals of diatomic molecules	04 January 2019
3.	Tutorial: Revision	05 January 2019
4.	Molecular orbital energy level diagrams of N ₂ , O ₂ and F ₂ molecules	07 January 2019
5.	π Molecular orbitals of butadiene and benzene, Crystal Field Theory (CFT): Salient Features of CFT	10 January 2019
6.	Crystal Field Splitting of transition metal ion d- orbitals in Tetrahedral, Octahedral and square planar geometries.	11 January 2019
7.	Tutorial: Revision	12 January 2019
8.	Band structure of solids, Effect of doping on conductance.	17 January 2019
Unit - II: Water and its treatment		
9.	Hardness of water - causes of hardness Types of hardness : temporary & Permanent - estimation	18 January 2019
10.	Tutorial: Problems	19 January 2019
11.	Estimation of hardness of water by Complexometric method	21 January 2019
12.	Units of hardness-Numerical problems	24 January 2019
13.	Potable water its specifications-Steps involved in the treatment of water	25 January 2019
14.	Potable water its specifications-Steps involved in the treatment of water	28 January 2019
15.	Boiler feed water and its treatment	31 January 2019
16.	Disinfection of potable water by chlorination and Ozonization	01 February 2019
17.	Tutorial: Revision-Problems	02 February 2019
18.	Calgon conditioning, Phosphate conditioning and Colloidal conditioning.	04 February 2019
19.	External treatment of water – Ion exchange process	07 February 2019
20.	Desalination of water – Reverse osmosis.	08 February 2019
21.	Tutorial: Revision-Problems	09 February 2019
Unit - III: Electrochemistry and corrosion		
22.	Electrode-electrode potential, standard electrode potential	11 February 2019
23.	Types of electrodes – Calomel, Quinhydrone and glass electrode, Nernst equation	14 February 2019
24.	Determination of pH of a solution by using quinhydrone and glass electrode	15 February 2019
25.	Tutorial: Revision-Problems	16 February 2019
26.	Electrochemical series and its applications	18 February 2019
27.	Potentiometric titrations	21 February 2019
28.	Batteries: Primary (Lithium cell) and secondary batteries	22 February 2019
29.	Tutorial: Revision-Problems	23 February 2019
30.	Causes and effects of corrosion, theories of corrosion ,Mechanism of electrochemical corrosion Types of corrosion: Galvanic, water-line and pitting corrosion	25 February 2019
31.	Factors affecting rate of corrosion	01 March 2019
32.	Corrosion control methods	02 March 2019

33.	Surface coatings – metallic coatings – methods of application, Electroless plating of Nickel.	07 March 2019
Unit- IV: Stereochemistry, Reaction Mechanism and Synthesis of drug molecules		
34.	Introduction to representation of 3-dimensional structures	11 March 2019
35.	Structural and stereoisomers, configurations	14 March 2019
36.	Enantiomers, diastereomers	15 March 2019
37.	Tutorial: Revision	16 March 2019
38.	Optical activity and Absolute configuration, Conformation analysis of n-butane	18 March 2019
39.	Substitution reactions: Nucleophilic substitution reactions, Mechanism of S _N 1, S _N 2 reactions.	22 March 2019
40.	Tutorial: Revision	23 March 2019
41.	Electrophilic and nucleophilic addition reactions: Addition of HBr to Propene	25 March 2019
42.	Markownikoff and anti Markownikoff's additions, Grignard additions on carbonyl compounds	28 March 2019
43.	Elimination reactions: Dehydro halogenation of alkyl halides. Saytzeff rule	29 March 2019
44.	Tutorial: Revision	30 March 2019
45.	Oxidation reactions: Oxidation of alcohols using KMnO ₄	01 April 2019
46.	Oxidation reactions: Oxidation of alcohols using and chromic acid	04 April 2019
47.	Reduction reactions: reduction of carbonyl compounds using LiAlH ₄ & NaBH ₄	08 April 2019
48.	Hydroboration of olefins, Structure, Synthesis and Pharmaceutical applications of Paracetamol and Aspirin.	11 April 2019
Unit - V: Spectroscopic techniques and applications		
49.	Principles of spectroscopy, selection rules, Applications of electronic spectroscopy	12 April 2019
50.	Tutorial: Revision	13 April 2019
51.	Vibrational and rotational spectroscopy	15 April 2019
52.	Basic concepts of Nuclear magnetic resonance Spectroscopy	18 April 2019
53.	Tutorial: Revision	20 April 2019
54.	Chemical shift, Introduction to Magnetic resonance imaging.	22 April 2019

Text books:

1. Physical Chemistry by P.W. Atkins
2. Engineering Chemistry by P.C.Jain & Monica Jain.
3. Fundamentals of molecular spectroscopy by C.N.Banwell
4. Organic Chemistry: Structure and Function by K .P.C.Volhardt and N.E.Schore, Fifth Edition.
5. University Chemistry, by B.M.Mahan, Pearson IV Edition.
6. Engineering Chemistry(NPTEL Web book), by B.L.Tembe, Kamuluddin and Krishnan

Name and signature of the faculty: R.Divya Bharathi

Name and signature of Head of the Faculty: K Sandhya