Lesson plan

Name: Rachna

Subject- Introductory Chemistry – 1

Subject Code- B23-CHE-104

Session-2025-26

S.no.	Week	Syllabus
1	22 july- 26 july	Introduction to Atomic Structure and Bonding
2	28 july-2 August	Elementary introduction of chemical bonding.
3	4 August- 9 August	Representation of elements/ atoms, Lewis structure.
4	11 August- 16 August	Electronic configurations (1-30)
5	18 August- 23 August	Introduction to Carbon and Its Compounds. Test of unit - 1
6	25 August – 30 August	Tetravalency of Carbon, allotropes of carbon and their properties.
7	1 September-6 September	Hydrocarbons (1-5), nomenclature (linear compounds).
8	8 September- 13 September	Applications of hydrocarbons. Test of unit - 2
9	15 September-20 September	Polymers Introduction, elementary idea of synthetic and natural polymers.
10	22 September -27 September	Homo polymers and copolymers, uses and properties (Natural rubber, Vulcanized rubber, Polyethene, PVC, Styrene, Teflon, PAN, Nylon-66) .
11	29 September-4 October	Uses and properties (Natural rubber, Vulcanized rubber, Polyethene, PVC, Styrene, Teflon, PAN, Nylon-66) test of unit -3
12	6 October-11 October	Food Preservatives Elementary idea of natural and synthetic food preservatives
13	13 October-18 October	Rancidity, uses and properties, different food preservation processes (pickle, Jam).
14	27 October- 1 November	Artificial sweeteners, uses and properties

15	3 November- 8 November	Revision and test of unit -4
16	10 November-15 November	Doubt will be taken from whole syllabus.
17	17 November- 24 November	Revision of whole syllabus.

Lesson plan

Subject- Minor Chemistry - I **Subject Code- B23-CHE-103** **Session-2025-26**

S.no.	Week	Syllabus
1	22 july- 26 july	COVALENT BOND: Shapes of simple inorganic molecules and ions based on valence shell electron pair repulsion.
2	28 july-2 August	VSEPRtheory of linear, Trigonal planar molecules
3	4 August- 9 August	Shapes of Square planar , tetrahedral and trigonal.
4	11 August- 16 August	Shapes of bipyramidal and octahedral arrangements
5	18 August- 23 August	Hybridization with examples of different shapes
6	25 August – 30 August	Conceptof reaction rates, factors influencing the rate of reaction. Test of unit – 1
7	1 September-6 September	Order and molecularity of a reaction
8	8 September- 13 September	Numerical problems
9	15 September-20 September	Integrated rate expression for zero and first-order reactions
10	22 September -27 September	ALKANES : Nomenclature and classification of carbon atoms in alkanes
11	29 September-4 October	Isomerism in alkanes,Test of Unit-2
12	6 October-11 October	Methods of formation: Wurtz reaction, Kolbe reaction, Corey-House reaction and decarboxylation of carboxylic acids.
13	13 October-18 October	Practice session of nomenclature and isomerism
14	27 October- 1 November	METALLIC BOND AND SEMICONDUCTORS : Introduction

15	3 November- 8 November	Test of Unit-3 and revision
16	10 November-15 November	Conductors and semiconductors and Insulators
17	17 November- 24 November	Revision and Test of Unit-4

Lesson Plan

Name : Mrs. Rachna

Subject : Waste Management Techniques Session: 2025-26

Unit I: Solid, Hazardous, Biomedical & E-Waste (8 Hours)

Duration: 22 July – 18 August (4 weeks)

- **Week 1 (22 – 28 July):**
  - Introduction: Waste classification, generation, and characterization.
  - Basic aspects of solid waste management (generation, handling, storage, processing).
- **Week 2 (29 July – 4 Aug):**
  - Collection, transfer, and transport of solid wastes.
  - Processing techniques and ultimate disposal.
- **Week 3 (5 – 11 Aug):**
  - Hazardous waste: Definition, sources, effects, and disposal.
  - Management techniques: Physical, chemical, thermal treatments.
- **Week 4 (12 – 18 Aug):**
  - Solidification, chemical fixation, encapsulation, pyrolysis, incineration.
  - Biomedical wastes: Definition, categories, management.
  - E-waste: Sources and management.

Unit II: Disposal of Solid Waste (8 Hours)

Duration: 19 August – 15 September (4 weeks)

- **Week 5 (19 – 25 Aug):**

    - Sanitary landfill: Site selection, design, and operation.
- **Week 6 (26 Aug – 1 Sept):**
    - Leachate collection and treatment.
    - Secure land filling.
- **Week 7 (2 – 8 Sept):**
    - Incineration: Mass burn, rotary kiln, fluidized bed, liquid injection.
- **Week 8 (9 – 15 Sept):**
    - Waste gas flare incinerator, fixed grate, plasma pyrolysis.
    - Composting and vermicomposting.

Unit III: Industrial Waste Treatment (7 Hours)

Duration: 16 September – 13 October (4 weeks)

- **Week 9 (16 – 22 Sept):**
    - Principles of industrial waste treatment.
    - Sources of pollution: physical, chemical, organic, biological.
- **Week 10 (23 – 29 Sept):**
    - Manufacturing processes, flow sheets.
    - Waste reduction methods.
- **Week 11 (30 Sept – 6 Oct):**
    - Treatment and disposal methods in food industries (Sugar, fermentation).
- **Week 12 (7 – 13 Oct):**
    - Treatment and disposal methods in material industries (Paper, steel, metal plating, petroleum refineries).

Unit IV: Biotechnology in Waste Minimization (7 Hours)

Duration: 14 October – 10 November (4 weeks)

- **Week 13 (14 – 20 Oct):**
    - Role of biotechnology in waste minimization.
    - Recovery of by-products and raw material from wastewater.
- **Week 14 (21 – 27 Oct):**
    - Waste recovery and reuse.
    - Reclamation by groundwater recharge.
    - Agriculture reuse of effluent, sludge as fertilizer.
- **Week 15 (28 Oct – 3 Nov):**
    - Biomass for energy, metal recovery, bioscrubbing.
- **Week 16 (4 – 10 Nov):**
    - Biological treatment methods: Biomethanation, biodiesel, biohydrogen.

Revision & Assessment (2 weeks)

Duration: 11 November – 24 November

- **Week 17 (11 – 17 Nov):**
  - Revision of Units I & II.
  - Practice tests, Q&A.
- **Week 18 (18 – 24 Nov):**
  - Revision of Units III & IV.
  - Final discussions and preparation for exams.

Lesson Plan

Subject: Introductory Chemistry-II

Unit I: Pollution and Their Types

- **Week 1(22 – 28 July):**Introduction to Pollution – types, causes, and effects
- **Week 2 (29 July – 4 Aug):** Plastic & Polythene Pollution – sources, impact on environment & health
- **Week 3 (5 Aug-11 Aug) :** Recycling of Plastic, Pollution Sources
- **Week 4 (12-18 Aug) :** Greenhouse Effect & Ozone Depletion

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Unit II: Energy

- **Week 5 (19-25 Aug):** Energy sources – Renewable vs Non-renewable
- **Week 6(26 Aug-1 Sep):** Cells & Batteries (working principles, examples)
- **Week 7(2-8 Sep):** Fuel Cell, Solar Cell
- **Week 8(9-15 Sep):** Polymer Cell and Unit II Review

Unit III: Water

- **Week 9(16-22 Sep):** Sources of Drinking Water & Uses, Water Conservation, Permissible TDS
- **Week 10(23-29 Sep):** Techniques of Water Purification, R.O. Process
- **Week 11(30 -6 Oct):** Osmosis, Reverse Osmosis, Wastewater Management
- **Week 12(7-13 Oct):** Wrap-up & Unit III Review

Unit IV: Pesticides and Herbicides

- **Week 13(14-20 Oct):** Introduction & Definition, Biological Control vs Chemical Control
- **Week 14(21-27 Oct):** Natural & Synthetic Pesticides, Examples
- **Week 15(28-3 Nov):** Benefits & Adverse Effects of DDT, BHC, Malathion
- **Week 16(4-10 Nov):** Wrap-up & Unit IV Review

Revision and Tests

- **Week 17(11-17 Nov):** Comprehensive Revision – Units I & II
- **Week 18(18-24 Nov):** Comprehensive Revision – Units III & IV + Test
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