

Lesson Plan

Name of the Faculty: Mr. Ashutosh Dixit (Theory & Practical)

Discipline: Department of Applied Sciences and Humanities

Semester: Diploma 1st Sem

Subject: Applied Chemistry-I, Applied Chemistry Lab-I

Work Load (Lecture/Practical) per week (in hours): Lectures-03, Practicals-02

Week	Theory		Practical	
	Lecture day	Topic (including assignment/test)	Practical day	Topic
1 st	1 st	Introduction: Basic Concept of Chemistry	1 st	Volumetric analysis and apparatus used in volumetric analysis
	2 nd	Physical Classification of matter –solids, liquids, gases.		
	3 rd	Chemical Classification of matter - element, compounds and mixtures		
2 nd	4 th	Symbols of elements and valency, writing of chemical formulae of simple compounds	2 nd	Preparation of standard solution of oxalic acid or potassium permanganate
	5 th	Calculation of percentage of elements in simple compounds using atomic and molecular masses		
	6 th			
3 rd	7 th	Revision	3 rd	To prepare N/20 oxalic acid/ potassium dichromate solution from given N/10 oxalic acid/ potassium dichromate solution
	8 th	Fundamental particles- mass and charges of electrons, protons and neutrons with names of the scientists who discovered these fundamental particles.		
	9 th	Bohr's model of atom. Successes and limitations of atomic theory		
4 th	10 th	Atomic number, atomic mass number isotopes and isobars.	4 th	To determine strength of given sodium hydroxide solution by titrating against standard oxalic acid solution using phenolphthalein indicator
	11 th			
	12 th	Chemical bonding and cause of bonding and types such as ionic bond in NaCl sigma (σ) and pi (π) covalent bonds in H ₂ , HCl, Cl ₂		
5 th	13 th	Metallic bonding- explanation with the help of electron gas (sea) model	5 th	Electroplate the given strip of Fe/Cu with Cu/Ni
	14 th	Revision		
	15 th	Definition of solution, solute and solvent with examples		
6 th	16 th	Methods to express the concentration of solution molarity (<i>M</i>), molality (<i>m</i>) and normality (<i>N</i>) and numericals based on calculation of <i>M</i> , <i>m</i> and <i>N</i>	6 th	Revision
	17 th			
	18 th	Introduction to pH of solution, simple		

		numericals on pH and industrial applications of pH		
7 th	19 th	Definition of buffer solution and industrial applications of buffers solutions	7 th	Estimation of total dissolved solids in given tap water
	20 th	Revision		
	21 st	Water resources on Earth		
8 th	22 nd	Classification of water – soft water and hard water, action of soap on hard water, types of hardness, causes of hardness, units of hardness – mg per litre (mgL ⁻¹) and part per million (ppm) and simple numericals	8 th	Determination of pH of given solution using pH meter
	23 rd			
	24 th	Disadvantages caused by the use of hard water in domestic and boiler feed water		
9 th	25 th	Removal of hardness -Permutit process and Ion-exchange process	9 th	Estimation of total hardness of water using standard EDTA solution and using erichrome black-T indicator and approximately neutral buffer solution
	26 th	Indian Water Quality standards as per WHO/BIS		
	27 th	Natural water sterilization by chlorine and UV radiation and reverse osmosis		
10 th	28 th	Revision	10 th	Revision
	29 th	Revision		
	30 th	Electronic concept of oxidation, reduction and redox reactions		
11 th	31 st	Definition of terms: electrolytes, non-electrolytes, conductors, insulators, semi-conductors with suitable examples	11 th	Estimation of total alkalinity of given water sample by titrating it against standard sulphuric acid solution
	32 nd			
	33 rd	Faraday's laws of electrolysis and simple numerical problems		
12 th	34 th	Faraday's laws of electrolysis and simple numerical problems	12 th	Revision
	35 th	Industrial Application of Electrolysis – Electroplating, electrolytic refining and electrometallurgy		
	36 th			
13 th	37 th	Application of redox reactions in electrochemical cells commercial dry cell (Primary), commercially used lead storage battery and lithium ion battery (Secondary cell)	13 th	Revision
	38 th			
	39 th	Revision		
14 th	40 th	Tetra valency and catenation property of carbon to produce huge organic compounds	14 th	Revision
	41 st			
	42 nd	Classification of organic compounds on the basis of functional groups		
15 th	43 rd	Nomenclature of simple organic compounds in accordance with I.U.P.A.C.	15 th	Revision
	44 th			
	45 th	Revision		

