CHEMISTRY
XI-XII Practicals

PRACTICALS	EQUIPMENT	CHEMICALS
XI-Practical's		
Chapter 1: **Introduction to Stoichiometry**		
1. Estimate the Amount of Ba^{2+} in the Given Solution of $BaCl_2$ Gravimetrically.	analytical balance, oven, funnel, wash bottle, Whatman filter paper # 42, glass rod, beakers, desiccators, pipette, burner, matches, safety goggles	distilled water, potassium chromate solution, barium chloride solution
Chapter 2: **Atomic Structure**		
None	None	None
Chapter 3: **Theories of Covalent Bonding: Theories and** Shapes **of molecules**		
None	None	None
Chapter 4: States of Matter I: Gases		
2. Demonstrate that Gases spread by diffusion to Areas ofbwer .	glass tube 40cm long and 1cm in internal diameter, ring stand, clamp, clamp holder, cotton balls, forceps, dropper, rubber stoppers, safety goggles	concentrated NH_3 solution, concentrated HCl
Chapter 5: States of Matter II: **Liquids**		
1. Separate the Given Mixture of Inks by Paper Chromatography.	Whatman filter paper # 1, glass cylinder with a glass support, rubber bung, lead pencil	Water —alcohol mixture, mixture of inks.

2. Separate the Following Ions from a given Mixture of their Salts (Ni ^{2}, Co“^{2}, Cu+*! by Paper Chromatography.	Whatman filter paper # 1, glass cylinder with a glass support, rubber bung, lead pencil	1ºâ solutions of the chlorides of Ni, Co, Cu+^{2}, spraying solution (0.1% rubeanic acid in ethyl alcohol), solvent mixture (acetone, distilled water and concentrated HCI mixed in ratio 43:3:4)
3. Separate Lead and Cadmium in a mixture solution by Paper Chromatography.	Whatman filter paper # 1, glass cylinder with a glass support, rubber bung, lead pencil	sample reagent (mixture of solutions of PbC!2 and CdC!2), solvent mixture (n-butanol + 3M HNO_3). spraying agent (H_2S gas)
4. Prove that the Loss of Thermal Energy When a Liquid Evaporates Will Lower the Temperature of the Liquid.	beaker, thermometer, safety goggles	acetone

Chapter 6:
States of Matter III:
Solids

• Crystallize Benzoic Acid from water.	China dish, burner, tripod stand, wire gauze, matches, beakers, funnel, filter paper, stirrer, safety goggles	distilled water and benzoic acid

Chapter 7:
Chemical Equilibrium

1. Purify a Given Sample of Sodium Chloride by Passing HCI Gas. (Application of common ion effect)	beaker 500ml, funnel, round-bottom flask, glass tubing, wire gauze, thistle funnel, burner, stirrer, graduated flask and physical balance	distilled water, common salt, concentrated H_2SO_4
2. Demonstrate a Shift in the Equilibrium Point of a Reaction by Changing Concentration. (Le Chatelier's Principle)	3 beakers of 150mL, 4 beakers of 50mL, safety goggles	0.1 M KmCF 4_3 0.1M K_2Cr_2Oy, 1M HCI, 1M NaOH, 0.1M Ba(NO$)z

Chapter 8:
Acids, Bases and Salts

1. Determine the Exact Molarity of the Given Solution of H_2SO_4 and the Volume of this Acid Required to Prepare 500 ml of 0.02 M Acid by Volumetric Method	burette, pipette, funnel, conical flask, beakers, iron stand	phenolphthalein, 0.1M NaOH, 0.2M H_2SO_4› distilled water
2. Determine the Percentage of NaOH in the Given Solution by Volumetric Method.	burette, pipette, funnel, conical flask, beakers, iron stand	phenolphthalein, 0.1M NaOH, 0.1M HCI, distilled water, solution containing 8gms of a mixture of NaCI and NaOH
3. The given solution contains 6gms of $NazCO_3$ dissolved per dm^3. Determine the Percentage Purity of the Sample Solution by Volumetric Method.	burette, pipette, funnel, conical flask, beakers, iron stand	methyl orange, 0.1M Na CO , 0.1M HCI, Distilled water, solution of 6 gms of NamCOa in 1 liter
4. Determine the Value of X by Volumetric Method in the Given Sample of 6.3g of $(COOH)_z$· XHgO Dissolved per dm*.	burette, pipette, funnel, conical flask, beakers, iron stand	phenolphthalein, 0.1M NaOH, 0.1 $(COOH)_2$ $2H_2O$, Distilled water
5. Determine the Solubility of Oxalic Acid at Room Temperature Volumetrically.	burette, pipette, funnel, conical flask, beakers, iron stand	Phenolphthalein, 0.1M NaOH, 0.1 (COOH) 2.2 H_zO, Distilled water.

Chapter 9:
Chemical Kinetics

1. Show that the Addition of a Catalyst Increases the Rate of Reaction.	500 ml flask, spatula, tray, safety goggles	10% H_2O_2, 0.1gm MnO_2, distilled water

Chapter 10:
Solution and Colloids

None	None	None

Chapter 11:
Thermochemistry

1. Determine the Heat of Neutralization of NaOH and HCl.	calorimeter with stirrer, thermometer, balance	1M NaOH, 1M HCl, distilled water

Chapter 12:
Electrochemistry

1. Standardize the Given Solution of $KMnO_4$ and Calculate the Volume of $KMnO_4$ Required for Preparing 1 dm* of 0.01M $KMnO_4$ Solution Volumetrically.	burette, pipette, funnel, conical flask, beakers, iron stand, test tube	0.1M $FeSO_4$ solution, 0.02M $KMnO_4$ solution, dilute H_2SO_4. distilled water
2. Determine the Amount of Iron in the Given Sample Volumetrically.	burette, pipette, funnel, conical flask, beakers, iron stand, test tube	0.05M $FeSO_4$ solution, 0.01M $KMnO_4$ solution, dilute H_2SO_4. distilled water
3. Determine the Percentage Composition Volumetrically of a Solution Mixture of $K_2C_2O_4$ and K_2SO_4	burette, pipette, funnel, conical flask, beakers, iron stand, test tube	solution mixture of $K_2C_2O_4$ and K_2SO_4, 0.01M $KMnO_4$ solution, dilute H_2SO_4. distilled water

4. Determine the Solubility of Mohr's Salt at Room Temperature Volumetrically.	burette, pipette, funnel, conical flask, beakers, iron stand, test tube	0.05 M Mohr's salt solution, 0.01M $KMnO_4$ solution, dilute H_2SO_4, distilled water

XII-PRACTICALS

Chapter 13:
s- and p- Block Elements

1. Prepare Potassium Xanthate	beakers, funnel, filter paper, measuring cylinder, safety goggles	potassium hydroxide, alcohol, carbon disulphide, ether (for washing of crystals), distilled water, copper sulphate solution
2. Detect the Following Cations: NH_4", Mg^{2} , Al*+, Ca^{2} , CA", Mn^{2} , Fe^{2}*, Fe^{3}*, Cu^{2} , Zn^{2}+, Ba^{2} , Pb*+, Detect the Following Anions: $C3^{2}$, NOT-, NOT-, $SO4^{2}$ ' $SO3^{-2}$, CI-, Br-, I", $CrO4^{2}$ Perform Tests for the Following Gases: NHg, CO z C!2 H z 0z, S0z.	test tubes, test tube holder, test tube rack, delivery tube, measuring cylinder, match box, wooden splint, Bunsen burner, safety goggles, glass rod, filter paper, litmus paper	sodium hydroxide, ammonium hydroxide, dilute acids, barium, lead, silver salt solutions, Al foil, lime water and other necessary chemical solutions for the identification of these ions and gases

Chapter 14:
d-f- Block Elements

1. Prepare Nickel Dimethyl Glyoxime.	test tubes, test tube holder, test tube rack, measuring cylinder, Bunsen burner, safety goggles, filter paper, funnel	dimethyl glyoxime solution, nickel salt solution, distilled water and NH_4OH

Chapter 15: **Organic Compounds**		
None		
Chapter 16: **Hydrocarbons**	None	None
1. Prepare Ethylene from Ethylene Bromide	test tubes, test tube holder, test tube rack, delivery tube, measuring cylinder, Bunsen burner, safety goggles	pieces of zinc metal, alcohol, ethylene bromide
Chapter 17: **Alkyl Halides and Amines**		
1. Prepare Azo dye from Amine.	test tubes, test tube rack, test tube holder, measuring cylinder, balance, filter paper, funnel	amine, phenol, hydrochloric acid, ice, sodium nitrite, alcohol, distilled water
2. Identify the Amine Functional Group.	test tubes, test tube rack, test tube holder, measuring cylinder, balance, filter paper, funnel	Hinsberg test: benzenesulfonyl chloride, sodium hydroxide, HCl
Chapter 18: **Alcohols, Phenols and Ethers**		
1. Prepare lodoform.	test tubes, test tube holder, test tube rack, Bunsen burner, safety goggles	alcohol, sodium hydroxide, water, solution of iodine in potassium iodide
2 Identify the Phenol Functional Group.	test tubes, test tube holder, test tube rack, measuring cylinder, safety goggles	Litmus solution, Ferric Chloride solution
Chapter 19: Carbonyl Compounds I: Aldehydes and Ketones		
1. Prepare Glucosazone.	Beakers, test tubes, measuring cylinders, balance, Bunsen burner. match box, funnel, filter papers	glucose solution, 2,4-dinitrophenyl hydrazine solution, distilled water
2. Identify the Aldehyde and Ketone Functional	beakers, test tubes, measuring cylinders, Bunsen burner, match box, funnel, filter papers	Fehling's solution, Tollen's reagent, Benedict solution

Groups.

Chapter 20: Carbonyl **Compounds II Carboxylic Acids and Functional** derivatives

1. Prepare Benzanilide from Benzoic Acid.	beakers, test tubes, measuring cylinders, Bunsen burner, match box, funnel, filter paper	benzoic acid, phosphorous pentachloride, ice, alcohol, distilled water
2. Identify the Carboxylic Acid Functional Group.	test tubes, beakers, balance, measuring cylinders, funnel, filter paper	Dilute sodium hydroxide, saturated potassium bi carbonate

Chapter 21
Biochemistry

1. Detect glucose as Reducing sugar in urine sample of diabetic patient	test tubes, beakers, conical flask, pipette,	Benedict Reagent, Fehling's Solution
2. Detect Protein Urea denaturation)	test tubes, beakers, conical flask, pipette,	Urea, egg white
3. Observe the digestion of starch with salivary amylase.	test tubes, beakers, conical flask, pipette, slides	Freshly prepared starch solution, iodine solution
4. Detect the presence of different lipid components in an oil sample by TLC	beakers, pipette, slides	Benzene, alcohol, Silica gel Chromatographic Grade
5. Determine the Iodine number of an oil	test tubes, beakers, conical flask, pipette, beakers	Iodine solution, oil

Chapter 22:
Industrial Chemistry

None	None	None

Chapter 23: Environmental Chemistry			
	None	None	None
Chapter 24: Analytical Chemistry			
1	Taking Infra Red, Ultra Violet/visible and Mass Spectra	Subject to the availability of the instruments	As required for the experiment