

## Experiment wise APPARATUS & CHEMICALS

1. Experiment NO.1 :- Preparation of 250 mL N/10 Oxalic acid solution.

Required Apparatus:- Watch glass, analytical balance weight box, fractional weight box, 250ml beaker, glass rod, 250 ml measuring flask and wash bottle.

Required chemicals:- Oxalic acid crystals and distilled water.

2. Experiment NO.2 :- Preparation of 250 ml N/10 Sodium Carbonate solution.

Required Apparatus:- Chemical balance, watch glass, weight box, 250ml beaker, Glass rod, 250ml beaker, Glass rod, 250 ml measuring flask, Wash bottle, weighing tube, Sodium carbonate, funnel, Funnel stand and Distilled water.

Required Chemical:- Sodium bicarbonate or household baking soda

3. Experiment No.3:- To determine the strength of Sodium Hydroxide solution by titrating against Oxalic acid solution.

Materials Required:- Burette, Pipette, Conical Flask, Burette stand, Funnel, stirrer, with glazed tile, measuring flask, Oxalic acid (solid), Oxalic acid (as per needed), Sodium hydroxide solution (as per needed), Phenolphthalein indicator (as per needed)

Required Chemical:- Phenolphthalein indicator, Oxalic acid.

4. Experiment NO.4 :- Gravimetric Estimation of moisture in given Coal sample.

Apparatus & Equipment:- Metal Tong, Heat Resistant Gloves, Spatula, Permanent Marker Pen, Hot air oven, Petri Dish, Desiccator, Balance machine.

5. Experiment-5 :- Determination of Temporary Hardness of Tap water.

Required Apparatus :- Eye Protection, Measuring cylinders ( $10\text{cm}^3$ ),  
Xs (one for each of the solutions A to E),  
Conical Flask, Burette and Burette Stand,  
Small funnel.

Required Chemicals :- Soap Solution in IDA (Industrial Denatured Alcohol)  
(HIGHLY FLAMABLE HARMFUL),  $75\text{cm}^3$  per group,  
and distilled or deionised water.

6. Experiment-6 :- Determination of Percentage of Water of  
Crystallization in Barium chloride.

Apparatus Required :- Crucible, Desiccator, oven & Furnace, Aqueous  
Barium chloride crystals  $\text{BaCl}_2 \cdot x\text{H}_2\text{O}$

Chemicals Required :- 2.5g barium chloride,  $10\text{cm}^3$  of 0.2M Sodium  
Sulphate solution, Potassium chromate indicator,  
0.100M Silver nitrate standard solution.

7. Experiment-7 :- Prepare Phenol Formaldehyde resin (Bakelite)  
Preparation of Cupric oxide from Copper Sulphate.

Apparatus Required :- Measuring cylinder, Beaker, Glassrod, Spatula,  
Evaporating basin, Filter, Conical flask, water bath  
and Bunsen burner.

Chemicals Required :- Sulfuric acid, copper (II) oxide

8 Experiment 8 :- To Determine Dissolved Oxygen in given sample of  
Water.

Required Apparatus :- Standard Volumetric Flask, Pipette, burett,  
Conical Flask, stop-cock, beakers, Funnel and  
glass rod.

Required Chemicals :- Manganese Sulphate, Sulphuric acid, Potassium  
iodide, Sodium thiosulphate, starch.

9. Experiment 9 :- Determination of viscosity of Lubricating oil using Ostwald viscometer.

Apparatus Required :- Red wood viscometer no. 1 & no. 2, stop watch, Kohlrausch flask, thermometer, filter paper.

Chemicals used :- Given sample of Lubricant, Suitable organic solvent like  $\text{CCl}_4$ , either Petroleum spirit or benzene.

10. Experiment 10 :- pH meter is used to determine pH of given sol<sup>n</sup>.

Materials Required :- pH meter, buffer solutions of pH 4, pH 7 and pH 10, beaker.

Chemicals used :- HCl solution, KOH solution, Fanta, Coke, Lemon Juice, Nescafe and liquid detergent ~~sol~~, conical flask.

11. Experiment 11 :- To Determine Dissolved oxygen in given sample of water.

Apparatus Required :- Standard Volumetric flask, Pipette, burette, Conical flask, stop-cock, beakers, Funnel and glass rod.

Chemicals Required :- Manganese sulphate, sulphuric acid, Potassium Iodide, sodium thiosulphate, starch.

12. Experiment 12 :- To prepare Phenol formaldehyde resin. (Bakelite)

Apparatus Required :- Glass rod, beakers, Funnel, measuring cylinder, Dropper and filter paper.

Chemicals used :- Glacial acetic acid, 40% formaldehyde solution, Phenol, conc.  $\text{H}_2\text{SO}_4$ .