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Safety Rules:-

(i) Conduct yourself in a responsible manner.

(ii) Follow all detail and further instruction.

(iii) Ask your teacher before proceeding with the activity.

(iv) Never work alone in the laboratory.

(v) Do not touch any equipment, chemicals or other materials in the laboratory area ~~un~~ until you are instructed to do so.

(vi) Unauthorised experiment are not followed.

(vii) Do not eat food, drink or chewing gum in the the laboratory.

(viii) Read all procedures thoroughly before entering the laboratory.

(ix) Work area should be kept clean.

(x) Be alert and proceed with caution at all times in the laboratory.

Teacher's Signature _____

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(xi) Inform the teacher immediately of any mishappening condition in the lab.

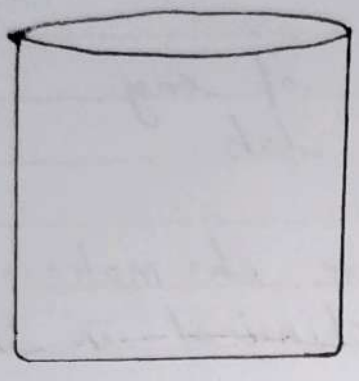
(xii) Dispose of all chemical, waste ch. material in dustbin and never mix chemical in the sink.

(xiii) Labels and Equipment instruction must be read carefully before use.

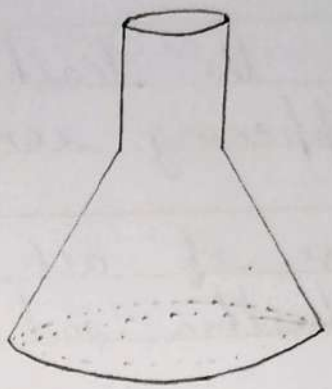
(xiv) keep hands away from face, eye, mouth and body ~~while~~ while using chemicals.

(xv) All student should be wear lab coat when entering the laboratory.

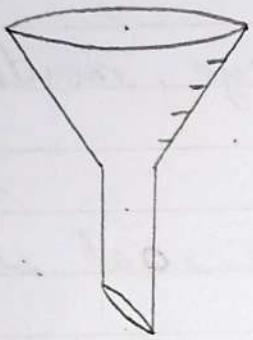
Teacher's Signature _____



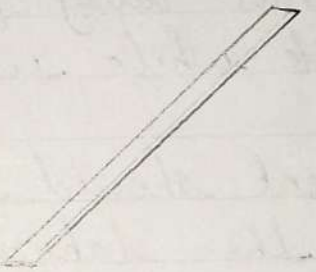
(i) Beaker



(ii) Conical flask

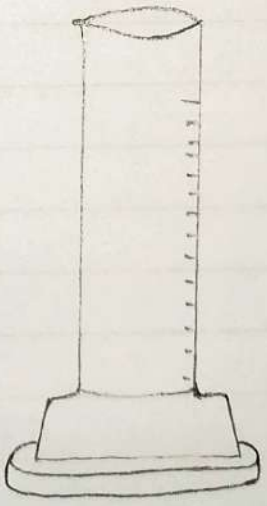


(iii) Funnel



(iv) Stirring Rod.

(v) Pipette



(vi) Measuring cylinder

Date _____

Expt. No. 01. Page No. 03

Aim :-

To study the glassware used in pharmaceutical chemistry lab.

Reference :

A Practical book of Pharmaceutical chemistry. Author - Dr. Jyoti Gupta, Mohit Sandysa, Ms. Madhuri Grover, Pg. No - 1 to 7.

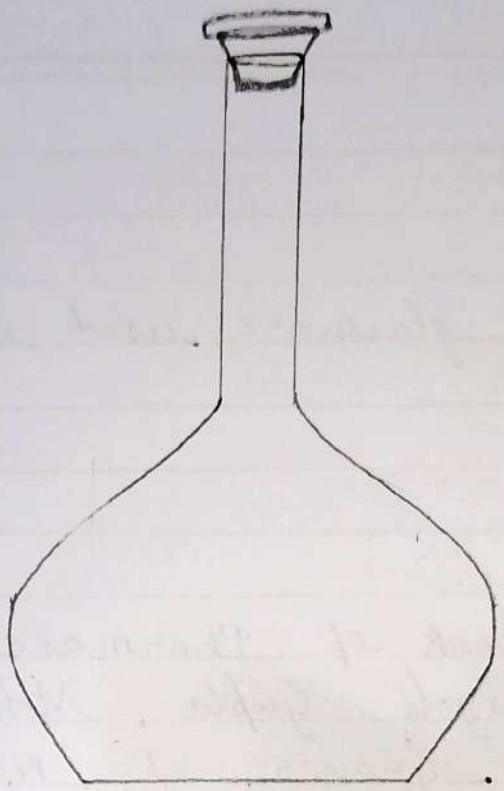
Requirement :

(i) Beaker
(ii) Conical Flask
(iii) Funnel
(iv) Stirring Rod.
(v) Pipette
(vi) Measuring Cylinder
(vii) Volumetric ~~cylinder~~ flask
(viii) Analytical wt. machine.

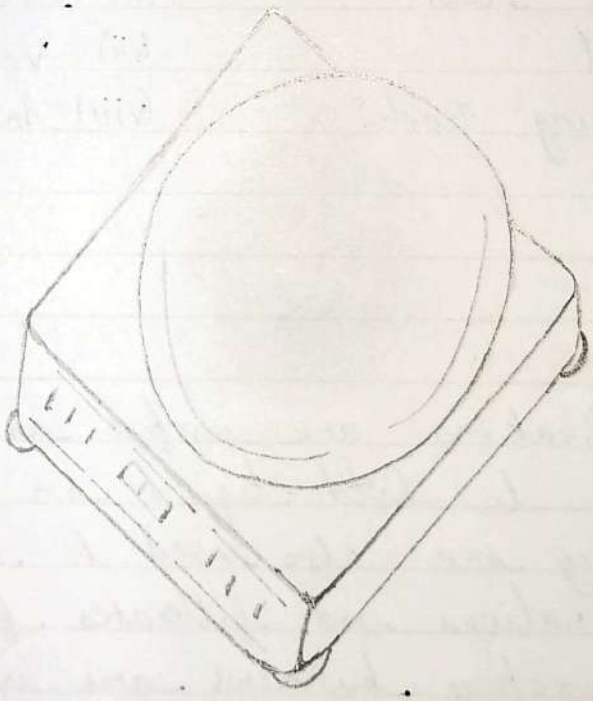
Theory :→

(i) **Beaker :→** Beakers are useful as a reaction container or to hold liquid or solid samples. They are also used to catch liquids from titrations and filtrates from filtering operations. Laboratory burners are used to heat the beaker.

Teacher's Signature _____



(vii) Volumetric Flask



(viii) Analytical weight machine.

(iii) Conical flask :- It is use to mix and heat the solution for short term period.

(iv) Funnel :⇒ A funnel is a tube or pipe that is wide at top and narrow at the bottom, used for guiding liquid or powder into a small opening.

(v) Stirring Rod :⇒ A glass rod is a piece of laboratory equipment used to mix chemicals.

(vi) Pipette :⇒ It is used for measuring an exact but smaller volume of liquid and placing it into another container..

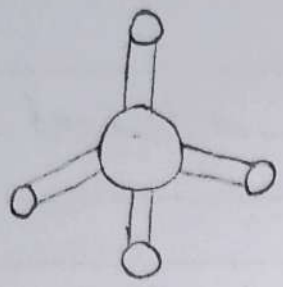
(vii) Measuring Cylinder :⇒ It is a measuring tool for determining the volume of a liquid. There are several marking up and down the length of the container.

(viii) Volumetric flask :⇒ It is used for accurate dilutions and preparations of solutions.

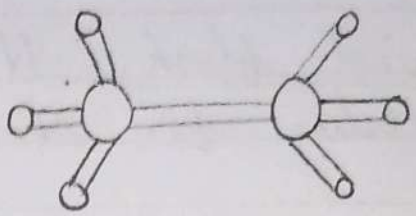
(ix) Analytical weight machine :⇒ It is use to weigh chemical compound.

Result :⇒ The given glassware was studied successfully.

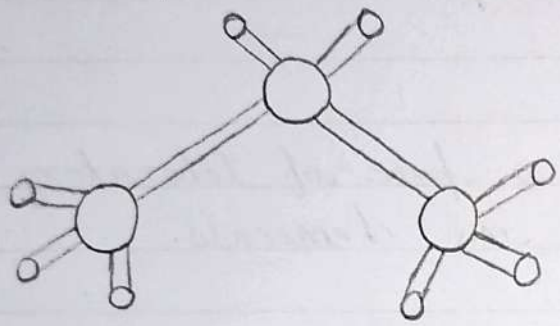
Teacher's Signature



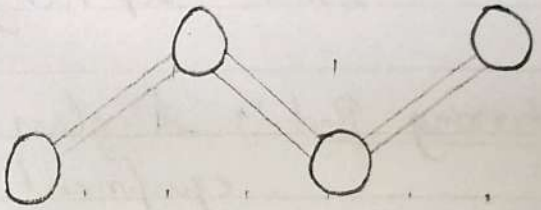
(a) Methane (CH_4)



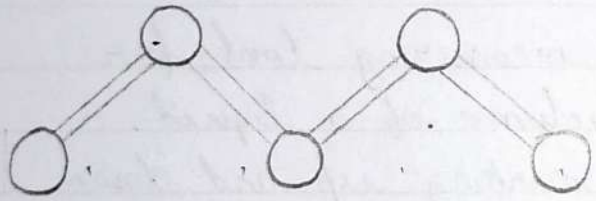
(b) Ethane (C_2H_6)



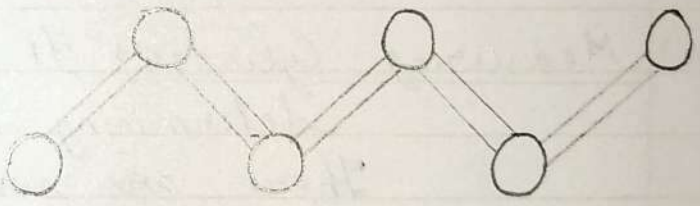
(c) Propane (C_3H_8)



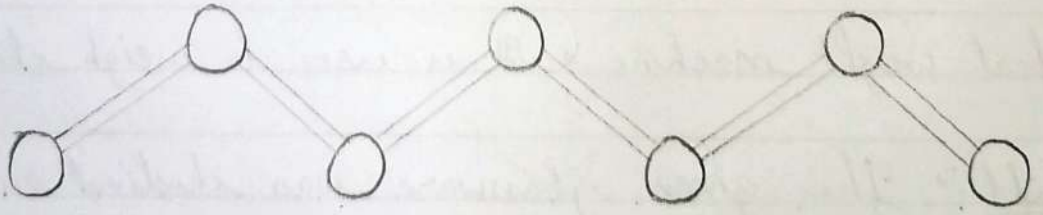
(d) Butane (C_4H_{10})



(e) Pentane (C_5H_{12})



(f) Hexane (C_6H_{14})



(g) Heptane (C_7H_{16})

Expt. No. 2 Date

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Aim :→

To construct different molecular models with the help of model set.

Reference :→

Requirement :→ Model set :-

Theory :→

Colour code and valancy (holes) for commonly used elements.

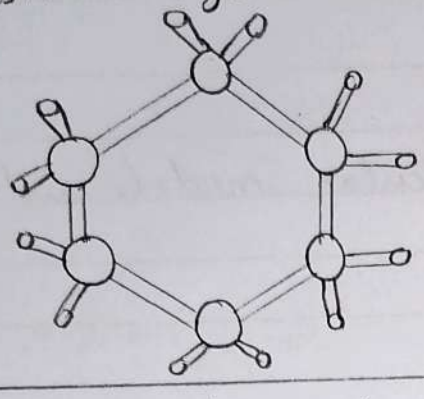
Atom Name	Colour of ball	No. of holes (valency)
Hydrogen	White	1
Oxygen	Red	2
Nitrogen	Blue	3
Carbon	Black	4
Sulfur	Yellow	2
Chlorine	Grece	1

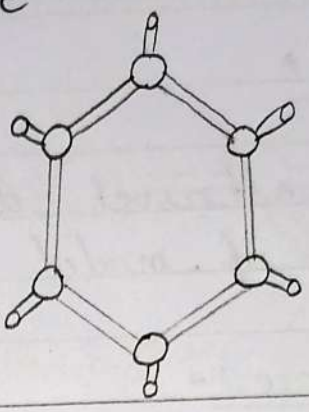
Alkane is the category name for a set of compound which contain carbon and hydrogen and only single bonds. An alkane has the general formula of C_nH_{2n+2}.

Teacher's Signature

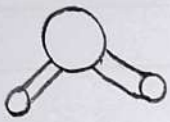
Molecules with Functional Group

(1). Construct cyclohexone and benzene

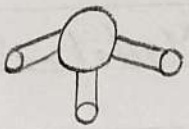


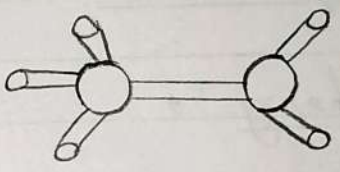


(2) Construct a water molecule

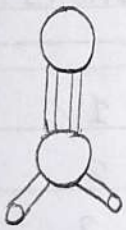


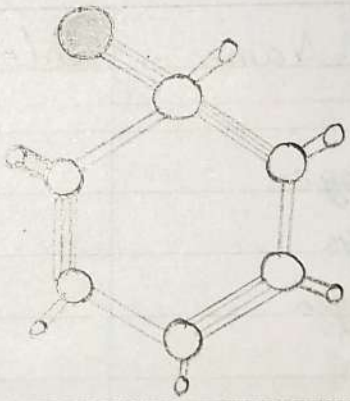
(3) Construct amonnia and methylamine



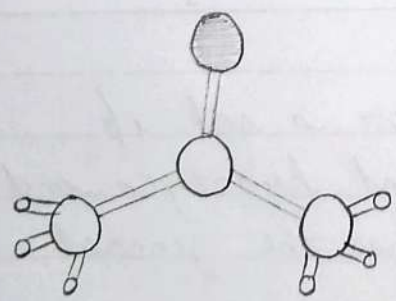


(4) Construct Formaldehyde and benzaldehyde

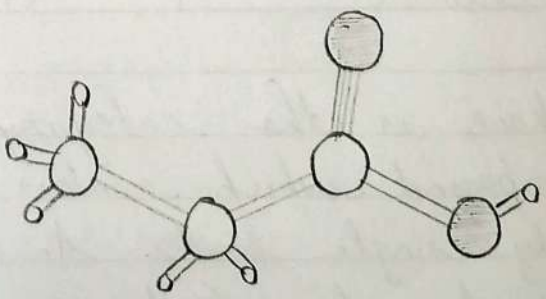




(5) Construct Acetone



(6) Construct Propanoic acid



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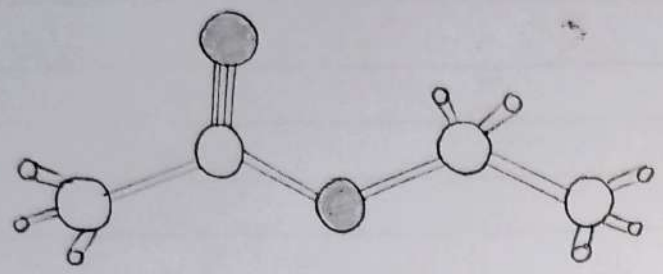
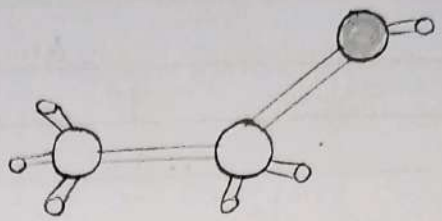
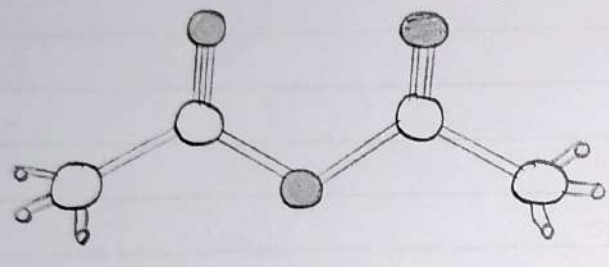
(7) Construct Ethyl acetate



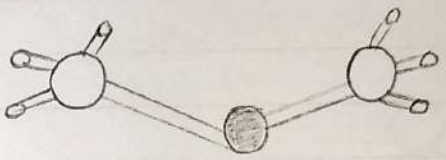
(8) Construct Ethanol



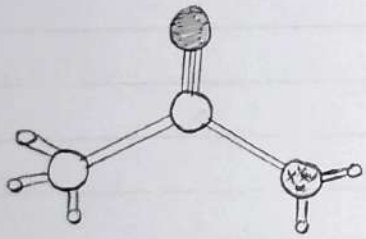
(9) Construct acetic anhydride



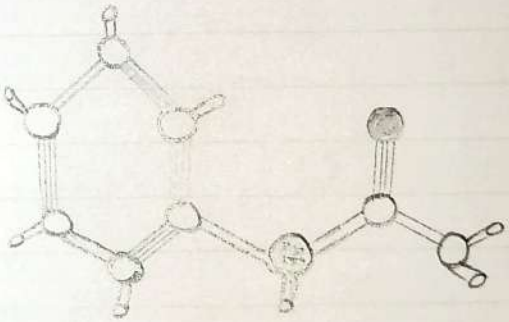
(10) Construct diethyl ether



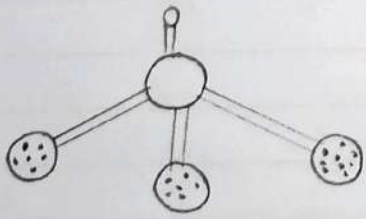
(11.) Construct acetamide



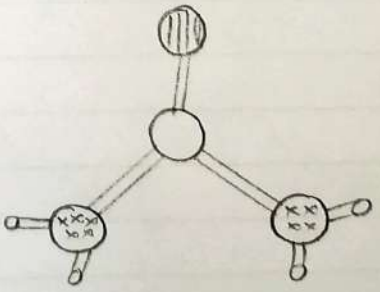
(12.) Construct acetanilide



(13) Construct chloroform



(14) Construct thiourea



Date _____

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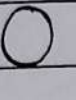
≡ ⇒ Double bond & = ⇒ Single bond

 ⇒ Carbon

 ⇒ Oxygen

 ⇒ Nitrogen

 ⇒ Chlorine

 ⇒ Sulphur

 → Hydrogen

Result :→

Construction of different molecular models with the help of model set was successfully performed.

Teacher's Signature _____

Date _____

Expt. No. 3. Page No. 08

Aim :→

To detect the presence of extra element nitrogen in the given sample. (urea).

Reference :→

Dr. Jain K.S. Dr Miniyal, P.B "A Practical book of pharmaceutical organic chemistry, Nirali Pub.

Requirement :→

(a) Glassware :→ Beaker, test tube holder, Glass rod.

(b) Chemical :→ Urea, water.

Theory :→

The behaviour of the compound towards various solvent like water. Dilute caustic soda, dilute HCl and conc. H_2SO_4 also reveals its nature. Take 0.1g or 0.2 ml (2-5) drop of the substance and dry to dissolve in 3 ml of the solvent and its solubility.

Teacher's Signature _____

Observation Table

S.No.	Experiment	Observation
1.	Physical state	Solid
2.	Colour	White
3.	Odour	odourless
4.	Solubility test	

1.	Sample + Cold water	Partially dissolved
2.	" + Hot "	easily "
3.	" + Conc. H_2SO_4	Partially "
4.	" + hot conc. H_2SO_4	easily "

Date _____

Expt. No. 3 Page No. 9

	Observation	Inference
→	Soluble in hot water and solution is acidic to litmus.	Salt of aromatic bases lower aliphatic acid hydroxy acid or Polly hydrogen Phenol.
→	Soluble in cold water and solution in neutral.	Carbohydrates or ~~alcohol~~ alcohol.
~~→~~	~~Soluble in cold dilute $NaHCO_3$ with effervescence~~ hot	~~Starch~~,
→	Solute in hot water and solution in neutral.	Starch,
→	Soluble in cold dilute $NaHCO_3$ with effervescence	Carboxylic acid, (strongly acidic)
→	Soluble in cold dilute NaOH	Carboxylic acid or Phenol.
→	Soluble in cold conc. H_2SO_4	Aromatic hydrocarbons or Phenol
→	Soluble in hot conc. H_2SO_4 and charring occur.	Carbohydrates accident ketone or ~~phenol~~ hydroxy acid.

Teacher's Signature _____

Date _____

Expt. No. 3 Page No. 10

Procedure :-

i) Take a clean and dried test tube and beaker.

ii) After that 1 gm urea put in each test tube accurately.

(iii) Now heated water in beaker with the help of a heating mantle.

iv) After that we put 3 ml hot water with pipette in one ~~that~~ test tube and mark up test tube as it is with hot water.

v) After observing first reaction we done. 2nd with 3 ml cold water it one gram of urea and mask that as cold one and observe it.

Result :-

The given sample of urea was observed in different sample successfully.

Teacher's Signature _____

Date

Expt. No. 04

Page No. 11

Aim :→

To detect the presence of extra element Dixtrose in the given sample (Dextrose ∓ Anhydrous Purified)

Reference :→

Dr. Jain K.S "A Practical Book of Pharmaceutical organic chemistry Nirali Publication.

Requirement :→

(a) Glassware :→ Beaker, Glassrod, test tube, Pipette, Measuring cylinder.

(b) Chemical :→ Dextros, Distilled water, Conc. H_2SO_4.

Theory :→

Dextrose is the name of the simple sugar that is made from corn and is chemically identical to glucose. or blood sugar.

Dextrose is often used in baking product as a sweetener and commonly found in item such as processed food and corn syrup dextrose also has medical purpose it is dissolved in a solution that are given intravenously when can be combined with other drugs or used to increase a person's blood sugar.

Teacher's Signature

Observation :-

S. No.	Experiment	Observation
1.	5 ml of water + Dextrose anhydrous	Turn red litmus to blue.

Date

Expt. No. 04

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Dextrose anhydrous is a form of glucose made from starch of corn just like sugar it is sweet in nature but contain around 20% less sweetness as compared to sugar made from sugarcane.

Dextrose anhydrous does not contain any water, produced in crystalline or powder form.

Dextrose like fructose and glucose is a monosaccharide also known as simple sugar. Simple sugar can be combined to produce complex sugar. Such as sucrose. Human body metabolizes each unit of simple sugar whereas complexes sugar are not easily metabolized by body. Dextrose anhydrous is widely used as a nutrition supplement and a sweetener in food production.

Procedure :-

(i) First of all, clean all the glasswares properly before used as dry it well.

(ii) Take sample of dextrose by weighing 1 gm of each.

(iii) Now take water and heat it for few minute.

Teacher's Signature

S.No.	Experiment	Observation
1.	Physical State	Solid
2.	Colour	White
3.	Odour	Odourless
4.	Solubility test	

1.	Sample + cold water	Partially dissolve
2.	Sample + Hot water	Easily dissolve
3.	Sample + hot conc. H_2SO_4	Burn the sample

(iv) Now add hot water and cold water each of 3 ml to a different test tube.

(v) Now take 3 ml of conc. H_2SO_4 and heat it well.

(vi) Add hot conc. H_2SO_4 in another test tube.

(vii) Now add sample of dextrose in each of test tube.

(viii) Note the observation.

Result :-

The given sample of dextrose anhydrous in three test tube, one was hot & water and ~~bad~~ found sample was easily dissolved, 2nd was cold water and found sample were partially dissolved and lastly was hot conc. H_2SO_4 and bound that sample were ~~born~~ burn and studied successfully.

Date _____

Expt. No. 05 Page No. 14

Aim :→

To determine the acid value of HCl.

Reference :→

Dr Miniyar P.B., Dr. Jain, K.B. Ap practical Book of Pharmaceutical Organic Chemistry. "Nirali Publication"

Requirement :-

S.No.	Chemicals	Qty(ml)	Apparatus	Qty
1.	Fixed oil (eg. Castor oil)	10.9	Iodine flask (250ml)	01
2.	Potassium hydroxide	2.9	Reflux condensor	01
3.	Conc. HCl	3.9	Burette (50ml)	01
4.	Methyl red (as indicator)	0.5	Beaker (250ml)	01
5.	Sodium Carbonate	0.59	Pipette (10ml) graduated	01
6.	Phenolphthalein Sol^n	2ml		

Teacher's Signature _____

Date

Expt. No. 05

Page No. 15

Theory :-

Acid is a substance that is sour in taste. It turns blue litmus to red. It's PH is less than 7. It is a molecule or iron capable of either donating a proton, known as a Bronsted lowry acid, or capable of forming a covalent bond with an electron known as lewis acid. The first category of acids are the Proton donor or bronsted lowry acids, It's aqueous solution release H^+ ions.

Ex :- HCl, Sulphuric acid.

Hydrochloric acid :- (HCl) → It is also known as muriatic acid is an aqueous solution of hydrogen chloride (chemical formula - HCl). It is a colourless solution with a distinctive pungent smell. It is classified as a strong acid, HCl is an important laboratory reagent and industrial chemical hydrochloric acid has many uses. It is used in the production of chloride fertilizers and dyes in electroplating and in the Photographic, textile and rubber industries. It is corrosive to eyes, skin and mucous membrane.

HCl is commonly ~~known~~ used for the neutralization of alkaline agents as a bleeding agent in food, textile, metal and rubber industries.

Teacher's Signature

Date _____

Expt. No. 05

Page No. 16

Procedure :-

(i) Weigh about 10 g of the substance being examined in an iodine flask.

(ii) Prepare 50 ml mixture of equal volume of ethanol (95%) and ether and 0.5 ml phenolphthalein sol^n and titrate it against 0.1 N aqueous potassium hydroxide (KOH) sol^n to neutralise it.

(iii) Dissolve weighed quantity of the substance in above neutralised sol^n if the sample does not dissolve in the cold solvent, connect the flask with condenser and warm slowly with frequent shaking until the sample dissolve.

(iv) Add 1 ml of phenolphthalein solution and titrate with 0.1 N aqueous potassium hydroxide (KOH) solution until the solution remains faintly pink after shaking for 30 seconds.

(v) Calculate the acid value from the following equation.

$$\text{Acid value} = 5.61 \times \frac{n}{w}$$

where n = the no. of ml of 0.1 N potassium hydroxide sol^n

w = weight of the substance in gm.

Teacher's Signature _____