CLASS X-PRACTICAL WORKSHEETS

Experiment No: ……5…… Date: ……

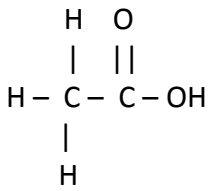
Objective: To study two physical and two chemical properties of acetic acid.

Requirements: Test tubes, Glass tubes (or dropper), Glacial acetic acid, ethanol, con. H_2SO_4, saturated solution of $NaHCO_3$, lime water, etc.

Concepts:

Molecular formula: CH_3COOH

Structural formula:



Procedure:

EXPERIMENT	OBSERVATION	INFERENCE
Take little con. Acetic acid on a watch glass and note the smell. (Do not inhale the gas)	Smell of vinegar	Acetic acid has a pungent smell
Take 1 ml of the sample in a test tube and then add about 5ml of water to it. Mix them well	Sample dissolves in water	Acetic acid is soluble in water
Dip a blue litmus paper in the sample	Blue turns to red	Litmus is red in acids
Dip a red litmus paper in the sample	Red remains red	Litmus is red in acids
Take a pinch of solid sodium bicarbonate and add about 2ml of Acetic acid to it.	Brisk effervescence of a colourless odourless gas	CO_2 gas is released. $NaHCO_3 + CH_3COOH \rightarrow CH_3COONa + H_2O + CO_2$
Pass the above gas through clear lime water	Lime water turns milky	CO_2 reacts with lime water to form $CaCO_3$. $Ca(OH)_2 + CO_2 \rightarrow CaCO_3 + H_2O$

Precaution:

Glacial acetic acid is corrosive in nature. It should be handled with care.

Never inhale con. Acetic acid vapours

Questions:

Name the functional group present in acetic acid.

Name the alkyl group present in acetic acid.

State the IUPAC name of the acetic acid.

Why pure acetic acid is called Glacial acetic acid? (It's FP is 16.60C / 289.6K. When it is cooled below 00C / 273K it forms white crystals like ice and hence it is called glacial acetic acid.)

Give two reasons for calling acetic acid as "acid" (1. Litmus, 2. react with N_2CO_3)

Why is one drop of con. H_2SO_4 added to the reaction mixture for esterification?

Acid acts as a catalyst

It also absorbs and removes the water formed during the reaction and makes the reaction proceeding in the forward direction only.

Why the esterification reaction mixture should not be heated on direct flame? / OR / Why one should not note try to note the smell of the mixture directly form the test tube?

(The reaction mixture can spurt and hence may cause serious accident.)

Multiple choice questions

1.	A student is asked to add a teaspoon full of solid NaHCO3 to a test tube containing approximately 3 mL of acetic acid. He observed that the solid NaHCO3 Floats on the surface of acetic acid Remains suspended in the acid Settles down in the test tube Reacts with acetic acid and a clear solution is obtained.
2.	Mohan added 5 mL of dil. ethanoic acid to 10mL of water in a test tube. After shaking the mixture he observed that A clear solution was observed A white ppt appeared in the test tube Ethanoic acid formed a separate layer at the bottom of the test tube. A colourless gas was evolved.
3.	Which one of the following reagent gives brisk effervescence with ethanoic acid? Ca(OH)2 NaCl NaHCO3 NH4Cl
4.	The chemical composition of lime water is ---------- and it is ------ in nature. CaO , acidic Ca(OH)2 , basic CaO, basic Ca(OH)2 , acidic
5.	A student takes a small quantity of NaHCO3 in a dry test tube and pours 4 – 5 drops of ethanoic acid to it. What will he observe? Evolution of a colourless gas with pungent smell. Bubbles of colourless , odourless gas. Evolution of brown fumes along wit abrisk efferscence. Evolution of a colourless gas with bounce with a pop sound when a burning splinter is brought near it.