

## **ACTIVITY NO: -2**

### **BEHAVIOUR OF ACID IN AQUEOUS MEDIUM**

|                           |                                                   |
|---------------------------|---------------------------------------------------|
| <b>Subject</b>            | <b>Science</b>                                    |
| <b>Class</b>              | <b>X</b>                                          |
| <b>Chapter/Unit</b>       | <b>Acids, Bases and Salts</b>                     |
| <b>Topic</b>              | <b>What happens to an acid in water solution?</b> |
| <b>Time</b>               | <b>45 minutes</b>                                 |
| <b>Nature of Activity</b> | <b>Group</b>                                      |

#### **What will I learn (Learning Outcome)?**

To analyze that the acidic character of any acid is due to formation of hydrogen ions in aqueous medium.

#### **Skills:**

Analyzing and Applying

#### **What I have to do?**

To study the acidic character of Hydrogen Chloride gas in aqueous medium with the help of blue litmus paper.

#### **What do I require?**

2 Test tubes, 1 Beaker (10mL), Potassium Chloride (KCl) salt, conc. Sulphuric acid ( $\text{H}_2\text{SO}_4$ ), water, and Blue Litmus paper.

#### **What do I need to know?**

Acids are chemical substances which dissociate to produce Hydrogen ( $\text{H}^+$ ) ions or Hydronium ( $\text{H}_3\text{O}^+$ ) ions in the aqueous medium. Since water is a polar solvent, it dissociates an acid to produce Hydrogen ( $\text{H}^+$ ) ions. These  $\text{H}^+$  ions further combine with water molecules to form Hydronium ions ( $\text{H}_3\text{O}^+$ )

#### **➤ Teacher's Activity**

Teacher will:

1. brief the experiment, divide the class into 8 groups with 4 students in each group.

2. make arrangements for the required apparatus and chemicals and instruct the important precautions to the students.

**Caution:** \*the activity requires use of conc. sulphuric acid, therefore, should be performed strictly under the supervision of a teacher\*

**Note to teachers:** *If the climate is very humid, you will have to pass the gas produced through a guard tube (drying tube) containing calcium chloride to dry the gas.*

### **How will I proceed?**

#### ➤ **Student's Activity**

1. Take about 1g of solid KCl in a clean and dry test tube.
2. Keep small amount of water ready in the 10mL beaker.
3. Add some concentrated sulphuric acid to the test tube slowly by the sides of the test-tube with the help of a dropper.
4. Observe the gas evolving from the test-tube.
5. Test the gas evolved with dry litmus paper.
6. Record your observation.
7. Test the gas evolved successively with the help of wet blue litmus paper by dipping the same litmus paper in water taken in the 10mL beaker.
8. Record your observations.

### **What have I observed?**

| S. No. | Blue Litmus paper | Reaction of Dry Hydrogen Chloride gas<br>(Colour changes OR No Colour change) |
|--------|-------------------|-------------------------------------------------------------------------------|
| 1.     | Dry               |                                                                               |
| 2.     | Wet               |                                                                               |

**What have I learnt?**

Thus, I conclude that as Hydrogen Chloride gas turns blue litmus to \_\_\_\_\_ in only in presence of \_\_\_\_\_.

**What am I curious to learn?**

- Let us take a small amount of Ammonium Chloride in a test-tube and add a small amount of Sodium Hydroxide to it. Now, test the evolved gas with dry and wet (i) red litmus paper and (b) blue litmus paper. What will I observe?

**Let me evaluate myself:**

Q1. Define Acids

---

---

---

---

Q2. Why does Hydrogen Chloride gas formed in the above activity produces a colour change only in aqueous medium?

---

---

---

---

Q3. What will happen if the Hydrogen Chloride gas produced in the above activity is allowed to pass through Methyl Orange.

---

---

---

---

Q4. Predict the chemical equations when Hydrogen Chloride gas is dissolved in water.

---

---

---

---

Q5. A student dissolved the Hydrogen Chloride gas in water to prepare a solution. She took a small amount of this solution in a beaker and tried passing electricity through it by connecting it with a battery and conducting wires. What will she observe?

---

---

---

---

---