CHAPTER 02

ACIDS AND BASES

Text book Exercise

1. **The sting of a wasp is basic. How can we treat the sting of a wasp?**

   Ans: The sting of a wasp is basic so we can treat it by using vinegar, which contains acetic acid to neutralize the effect.

2. **Why are acids not stored in a metal container?**

   Ans: Acids are not stored in metal containers because acids react with the metals and lead to corrosion of metals.

3. **Acidic, basic and neutral solutions given in three test tubes and you are given a strip of red litmus How will you identify the three solutions?**

   Ans: Litmus paper is natural indicator.

   - When red litmus paper placed in three test tubes, the solution that changes the red litmus to blue is the basic solution.
   - If we place the changed blue litmus paper in remaining two test tubes the solution that changes the blue litmus to red is the acidic solution and neutral solution does not change the color of the litmus.

4. **When drops of lemon juice are put on blue litmus, it turns red what will happen if you put some drops of soap solution on the same position on litmus paper?**

Ans: Litmus is a natural dye and used as an indicator. When drops of lemon are put on the blue litmus, it turns red because lemon juice contains citric acid. On the same litmus when soap solution dropped, it turns blue indicating the presence of base.

5. **What happens when Nitric acid added to eggshell?**

   Ans: Eggshell is made of calcium carbonate. When Nitric acid added to egg shell, it reacts with calcium carbonate and results in the formation of calcium nitrate and carbon dioxide.

6. **Turmeric stains on white clothes, when washed with soap, turn red. Why**

   Ans: Turmeric is a natural indicator. Turmeric is in yellow in color. Turmeric stains on white clothes when washed with soap it turns red because the soap is basic.

7. **Ammonia is present in window cleaners. It turns red litmus blue. What is its nature?**

   Ans: The change of red litmus to blue indicates the basic nature. It indicates that the ammonia is basic in nature.

8. **What is the nature of urea? Is it acidic, basic / neutral? How can we verify it?**

   Ans: Urea is a weak base. Litmus paper test with urea gives blue or purple color indicating its nature between weak base and neutral.

9. **Red litmus paper dipped in a solution. It remains red. What is nature of the solution? Explain your answer.**

   Ans: Red litmus paper dipped in solution remains red indicates the solution is acidic or neutral. Acidic solutions turn

the blue litmus to red and neutral solutions does not change the color of litmus. There is a possibility to think it as a acidic or neutral solution.

10. What is the effect of basic substances on turmeric paper?

Ans: Turmeric paper is a natural indicator. It is yellow in color. The turmeric paper shows red color with basic substances.

11. Can flowers and turmeric papers be called indicators Why?

Ans: Yes, flowers and turmeric paper called as indicators because they have the property of color changing when acid or base placed on them. These two are natural indicators.

12. Correct the statement if it is wrong

a) Indicators show different colors in acidic and basic solutions.

b) Sodium Hydroxide turns blue litmus red.

c) Tooth decay caused by the presence of base in water.

Ans:

a) Indicators show different colors in acidic and basic solutions.

b) Sodium hydroxide is a base. It turns red litmus to blue.

c) Tooth decay caused by the presence of acid.

13. Take vinegar, lemon juice, soapy water, baking soda in different vessels. Put beetroot pieces in the vessels. Predict what happens. Verify your prediction by observing the changes. After 10 minutes, 30 minutes, 60 minutes record your observations. What do you conclude?

Ans: Beetroot is a natural indicator. When Beetroot placed in the vessels of vinegar and lemon juice, the solutions turn red indicating the presence of acid. The solution changes into green color in case of soap water and baking soda indicating the basicity.

14. Visit a doctor. Find out the medicines she prescribes to treat acidity. Ask her how acidity naturally prevented. Prepare a report.

Ans: To treat acidity doctor prescribes antacid. Antacids help to neutralize the effect of acids produced in our stomach. Acidity can be prevented naturally by :

- Having breakfast on time
- Avoid junk food
- Drink plenty of water
- Intake of proper meals on time and rest

15. Prepare Violet cabbage juice by boiling a piece of cabbage in water. Use it as an indicator and test acidic and basic solutions with it. Present your observations in the form of a table.

Ans: Violet cabbage juice can be prepared by boiling a piece of cabbage in water. Separate the leaves and filter the solution. It acts as an indicator.

- When this indicator added to lemon juice or vinegar which are acidic in nature, gives pink color.
- Alkali like sodium bicarbonate solution gives blue color by adding this indicator.

16. Collect different flowers and prepare their natural indicators with the help of filter papers verify whether they act as indicators.

Ans: We all know hibiscus. Hibiscus is a natural indicator. Red Hibiscus gives purple color in presence of acid and gives red color with base.

17. Test the nature of lemon juice and milk sample with help of natural indicators prepared from different flowers. Explain their nature.

Ans: Lemon juice and milk both are acidic in nature. China rose petals used as indicator to test these samples. It gives dark pink color with these samples indicating the acidity.

Delphinium petals, also a natural indicator gives bluish red color when treated with these samples.

18. How do you feel about nature? It is a big natural laboratory that contains innumerable indicators

Ans: Yes, nature is a big laboratory having innumerable indicators like Hibiscus, Turmeric, Litmus, beetroot etc. that gives a basic idea about almost all the solutions.

19. Choose the correct answer:

a. To protect tooth decay we advised to brush our teeth regularly. The nature of the toothpaste commonly used is (i) Acidic (ii) Neutral (iii) Basic (iv) Salt

b. Which of the following is acidic in nature? (i) Lemon juice (ii) Baking Soda (iii) Lime Water (iv) Soap Water

Ans: a. iii) basic b. i) lemon juice

20. Match the following

a) Lactic Acid ( ) (1) Tomato

b) Acetic Acid ( ) (2) Lemon

c) Citric Acid ( ) (3) Vinegar

d) Oxalic Acid ( ) (4) Curd

Ans: a) lactic acid – 4) curd

b) Acetic acid – 3) vinegar

c) Citric acid - 2) lemon

d) Oxalic acid – 1) tomato

21. Why industrial wastes, neutralized before releasing into water?

Ans: Industrial wastes neutralized before releasing into water to save the aquatic lives and balance ecosystem. If the untreated wastes directly released into water it adversely, affect aquatic life and the humans dependent on them.