Science

(Chapter – 5) (Acids, Bases and Salts)

(Class – VII)

Exercises

Question 1:

State differences between acids and bases.

Answer 1:

S. No.	Acids	Bases
1.	Its taste is sour.	Its taste is bitter.
2.	When added to litmus solution, it turns red.	When added to litmus solution, it turns blue.
3.	Examples: Curd, lemon juice and vinegar.	Examples: Baking soda, Soap and lime water.

Question 2:

Ammonia is found in many household products, such as window cleaners. It turns red litmus blue. What is its nature?

Answer 2:

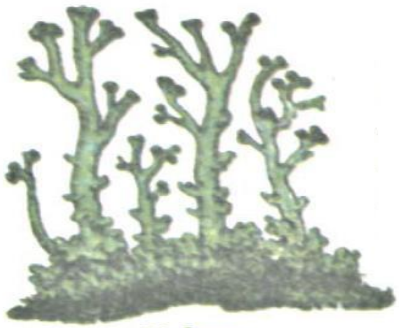
Bases turn red litmus blue, so nature of ammonia is basic.

Question 3:

Name the source from which litmus solution is obtained. What is the use of this solution?

Answer 3:

Litmus is extracted from lichens. It has a mauve (purple) colour in distilled water. When added to an acidic solution, it turns red and when added to a basic solution, it turns blue. So, it is used to test the acidic or basic nature of solutions.



Lichens

Question 4:

Is the distilled water acidic/basic/neutral? How would you verify it?

Answer 4:

Distilled water is neutral by nature. We can verify it by litmus test. Water does not change the colour of either red or blue litmus.

Question 5:

Describe the process of neutralisation with the help of an example.

Answer 5:

When an acid solution and a base solution are mixed in suitable amounts, both the acidic nature of the acid and the basic nature of the base are destroyed. The resulting solution is neither acidic nor basic, it become neutral. This process is known as neutralisation reaction.

Fill one fourth of a test tube with dilute hydrochloric acid and add few drop of litmus solution. Now the colour of the solutions become red. Now add to this acidic solution drops of sodium hydroxide solution gradually one by one with a dropper. Stir the tube gently. Continue adding the sodium hydroxide solution drop by drop while stirring till the colour just become green. Now the effect of hydrochloric acid is neutralized by the base sodium hydroxide.

Question 6:

Mark 'T' if the statement is true and 'F' if it is false:
(i) Nitric acid turn red litmus blue. (T/F)
(ii) Sodium hydroxide turns blue litmus red. (T/F)
(iii) Sodium hydroxide and hydrochloric acid neutralise each other and form salt and water. (T/F)
(iv) Indicator is a substance which shows different colours in acidic and basic solutions. (T/F)
(v) Tooth decay is caused by the presence of a base. (T/F)

Answer 6:

(i) Nitric acid turn red litmus blue. (**False**)
(ii) Sodium hydroxide turns blue litmus red. (**False**)
(iii) Sodium hydroxide and hydrochloric acid neutralise each other and form salt and water. (**True**)
(iv) Indicator is a substance which shows different colours in acidic and basic solutions. (**True**)
(v) Tooth decay is caused by the presence of a base. (**False**)

Question 7:

Dorji has a few bottles of soft drink in his restaurant. But, unfortunately, these are not labelled. He has to serve the drinks on the demand of customers. One customer wants acidic drink, another wants basic and third one wants neutral drink. How will Dorji decide which drink is to be served to whom?

Answer 7:

Dorji can use litmus test on these drinks. Just drop few drops of drink on litmus paper and take the decision according to the following:

- If it turns blue, drink is basic.
- If it turns red, drink is acidic.
- If it turns green, drink is neutral.

Question 8:

Explain why:

(a) An antacid tablet is taken when you suffer from acidity.

(b) Calamine solution is applied on the skin when an ant bites.

(c) Factory waste is neutralized before disposing it into the water bodies.

Answer 8:

(a) Due to release of excess of hydrochloric acid, we suffer from acidity. An antacid tablet consists of a base like Milk of Magnesia (magnesium hydroxide). It neutralizes the effect of excessive acid and brings relief.

(b) The sting of an ant contains formic acid which causes irritation on the skin. Calamine solution contains, zinc carbonate which is a base. Calamine solution neutralizes the acid effect of the ant bite when applied on the skin.

(c) The wastes of many factories contain acids. If they are allowed to flow into the water bodies, the acids will kill aquatic organisms. The factory wastes are, therefore, neutralized by adding basic substances.

Question 9:

Three liquids are given to you. One is hydrochloric acid, another is sodium hydroxide and third is a sugar solution. How will you identify them? You have only turmeric indicator.

Answer 9:

Turmeric is yellow in colour. When a base is added to it, the solution turns into pink colour. However turmeric remains yellow when an acid or neutral solution is added to it. We shall perform the following steps to identify the solution is base, acid or neutral.

- Take few drops from each solution and test it with turmeric solution. If the solution turns into pink colour that solution is base i.e. Sodium Hydroxide. Mark that beaker (containing solution) as base.
- Take a test tube and add few drops of base solution and second solution. Check if test tube becomes warm and then add turmeric solution to it. If the colour does not change, it means the solution added is acidic (HCl). The test tube becomes warm due to neutralization.
- If the test tube of the above solution does not warm and it does show pink colour when turmeric is added, the second solution is neutral.

Question 10:

Blue litmus paper is dipped in a solution. It remains blue. What is the nature of the solution? Explain.

Answer 10:

If a blue litmus paper when dipped in a solution, remains blue, it implies the solution is either basic or neutral.

Question 11:

Consider the following statements:
(a) Both acids and bases change colour of all indicators.
(b) If an indicator gives a colour change with an acid, it does not give a change with a base.
(c) If an indicator changes colour with a base, it does not change colour with an acid.
(d) Change of colour in an acid and a base depends on the type of the indicator.
Which of these statements are correct?
(i) All four (ii) a and d (iii) b and c (iv) only d

Answer 11:

(iv) only d