



ACIDS, BASES AND SALTS

EXERCISES

Question 1:

State differences between acids and bases.

Answer:

Differences between acids and bases are as follows

Acids

- They are sour in taste.
- They turn blue litmus to red.
- They are not soapy to touch.
- They are soluble in water.

Bases

- They are bitter in taste.
- They turn red litmus to blue.
- They are soapy to touch.
- They may or may not be soluble in water.

Question 2:

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

Answer:

The substances that turn red litmus to blue are basic in nature. Thus, ammonia is basic in nature.

Question 3:

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

Answer:

Litmus solution is obtained from lichens. It has mauve (purple) colour in distilled water. This solution is used as indicator.

Question 4:

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

Answer:

Distilled water is neither acidic nor basic. When we test its nature through litmus paper strips, we have found neither red nor blue change in colour which verifies its neutral nature.

Question 5:

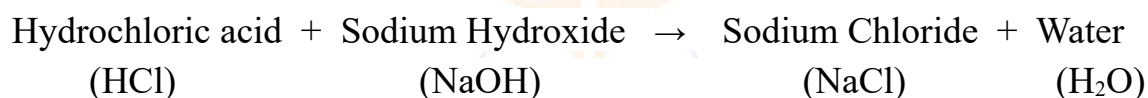
Describe the process of neutralisation with the help of an example.

Answer:

The reaction in which an acid reacts with a base to form salt and water along with evolution of heat is called Neutralisation.

Example – When Hydrochloric acid (HCl) reacts with sodium hydroxide (NaOH) to form sodium chloride (NaCl) and water (H₂O).
The sodium chloride is salt.

The reaction can be written as:

**Question 6:**

Mark 'T' if statement is true and 'F' if it is false.

- (a) Nitric acid turns red litmus to blue.
- (b) Sodium hydroxide turns blue litmus to red.
- (c) Sodium hydroxide and hydrochloric acid neutralise each other and form salt and water.
- (d) Indicator is a substance which shows different colours in acidic and basic solutions.
- (e) Tooth decay is caused by the presence of a base.

Answer:

- (a) False, nitric acid turns blue litmus to red because it is an acid.
- (b) False, sodium hydroxide is a base, so it will turn red litmus to blue.
- (c) True
- (d) True
- (e) False, tooth decay is caused by the presence of acid.

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:

Dorji will decide which drink is to be served to whom (customer) by doing the following litmus paper tests.

- (i) If the drink turns blue litmus paper to red, then the drink is acidic and hence, will be served to first customer who wants acidic drink.
- (ii) If the drink turns red litmus paper to blue, then the drink is basic and hence, will be served to another customer who wants basic drink.
- (iii) If the drink shows no change in colour with litmus paper, then it will be neutral drink. Thus, it will be served to third customer.

Since the soft drinks are edible, Dorji can take the decision by tasting the drinks also. Acidic drinks will be sour to taste, whereas basic drinks will be bitter to taste and neutral drinks will have no taste.

Here is the text extracted from the third image:

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 neutralised before disposing it into the water bodies?

Answer:

(a) We take an antacid tablet such as milk of magnesia to neutralise the excessive acid released in the stomach during acidity.

(b) When an ant bites, it injects the formic acid into the skin. The effect of acid can be neutralised by applying calamine solution that contains zinc carbonate which is a base.

(c) The factory wastes contain acids if they are allowed to flow into the water bodies without neutralising it, the acid can kill fishes and other organisms. The factory wastes are thus neutralised 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:

We will put a drop each of hydrochloric acid, sodium hydroxide and sugar solution on the turmeric indicator one by one. The liquid which changes the colour of turmeric indicator to red is basic in nature that is sodium hydroxide.

Now, this red turmeric paper may be used to identify which one of the remaining two liquids is hydrochloric acid. Put one drop of each of these remaining liquid on the red turmeric paper. The liquid whose drop will turn this red paper to yellow is hydrochloric acid. This is because hydrochloric acid neutralised the effect of sodium hydroxide on turmeric paper. There is no effect on turmeric solution by sugar solution as it is a neutral solution.

Question 10:

What could be the nature of the solution if there is no change observed when a blue litmus paper is dipped in a solution?

Answer:

The nature of the solution could be basic or neutral, as if it is acidic it would change its colour to red, but instead it remains same.

Question 11:

Consider the following statements

- (i) Both acids and bases change colour of all indicators.
- (ii) If an indicator gives a colour change with an acid, it does not give a change with a base.
- (iii) If an indicator changes colour with a base, it does not change colour with an acid.
- (iv) Change of colour with an acid and a base depends on the type of the indicator.

Which of the above statements is/are correct?

- (a) Only (iv)
- (b) (i) and (iv)
- (c) (ii) (iii) and (iv)
- (d) All of the above

Answer:

(a) All indicators do not change colour with acids as well as bases, e.g. turmeric changes its colour to pink with base, but it remains yellow with acid. Therefore, statement (i) is incorrect. There are some indicators which change colour with both acid and base, e.g. methyl orange, litmus, thus statement (ii) and (iii) are also incorrect. Change of colour with an acid and a base depends on the type of the indicator used. Hence, only statement (iv) is correct.

