

NCERT solution for Acid, Bases and Salt

Question 1

State differences between acids and bases.

Answer

The differences are given in table below

Acids	Bases
(i) Acids are sour in taste.	(i) Bases are bitter in taste.
(ii) It turns litmus paper red.	(ii) It turns litmus paper blue.
(iii) It doesn't change the colour of turmeric indicator.	(iii) It changes the colour of turmeric indicator to red.
(iv) It doesn't feel soapy on touching.	(iv) It feels soapy on touching.

Question 2.

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

Answer

As Ammonia turns red litmus blue so it 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 dissolved in distilled water. It is used to detect the acidic and basic characteristic of a substance as it changes its colour to red in acidic medium and into blue in basic medium.

Solution	Color of Litmus Solution
Acid	Red
Basic	Blue
Salt	Neutral

Question 4

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

Answer

The distilled water is neutral. This can be tested by Litmus paper. Litmus paper can be used to verify whether the distilled water is acidic/basic/neutral. Distilled water doesn't change the colour of blue or red litmus paper. So, it is neutral in nature.

Question 5

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

Answer

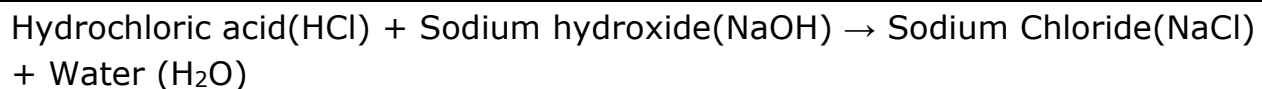
When an acid solution and a base solution are mixed in suitable amounts, both the solutions neutralize/cancel the effect of each other and a new substance, salt, is formed. This process is called neutralization.

So, neutralization is the chemical reaction between acid and base.

Example

When the solution of sodium hydroxide (a base) and hydrochloric acid (an acid) is mixed in a test tube in proper ratio, both neutralize each other. In this reaction, a new substance, sodium chloride, is formed. The mixture obtained is neutral in nature, which can be justified by litmus solution or phenolphthalein.

solution.



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 neutralize each other and form salt and water. (T/F)
- (iv) Indicator is a substance which shows different colors in acidic and basic solutions. (T/F)
- (v) Tooth decay is caused by the presence of a base. (T/F)

Answer

- (i) F
- (ii) F
- (iii) T
- (iv) T
- (v) F

Question 8

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 can do two things

1) As drink can be edible, Dorji can taste them, if it is sour then acidic, if it is bitter than basic and if no taste, the neutral

2) Dorji can use Litmus paper or solution. She will take red and blue litmus paper and dip drop of soft drink on them. The drink in which red litmus paper turns blue is bottle of basic drink. The drink in which blue litmus paper turns red is bottle of acidic drink. The drink in which both litmus paper shows no changes in colour is of neutral drink.

Solution	Color of Litmus Solution
Acid	Red
Basic	Blue
Salt	Neutral

Question 8.

Explain why:

- An antacid tablet is taken when you suffer from acidity.
- Calamine solution is applied on the skin when an ant bites.
- Factory waste is neutralized before disposing it into the water bodies.

Answer

(a) Excessive amount of acids in stomach causes pain and antacids prove relief from that pain. Antacids such as milk of magnesia neutralizes the effect of excessive acid as it is a base and acts against the acids.

(b) When an ant bites, it injects the acidic liquid (formic acid) into the skin. Calamine solution contains zinc carbonate which neutralizes the effect of acid injected by the ant.

(c) Factory waste is neutralized before disposing it into the water bodies because these wastes contain chemicals and harmful acids which may be harmful for the aquatic life and also its leads to pollution of water.

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

1) Put a drop of three liquids on turmeric indicator. The liquid in which the colour of turmeric indicator changes to red is basic in nature i.e. sodium hydroxide.

Turmeric indicator(yellow) + Three liquids -> sodium hydroxide (Color changes to red)

Since, we already identified sodium hydroxide.

We will put a drop of sodium hydroxide with drop of other liquid separately. sodium hydroxide(base) and hydrochloric acid will neutralize each other. So it will form neutral solution. If we put turmeric colour in it, no color change will happen

Hydrochloric acid(HCl) + Sodium hydroxide(NaOH) → Sodium Chloride(NaCl) + Water (H₂O) + Turmeric indicator(yellow) -> No color change

sodium hydroxide(base) and sugar solution will form basic solution. If we put turmeric colour in it, it color will change to red

Sodium hydroxide(NaOH) + Sugar solution -> Basic solution + Turmeric indicator(yellow) -> Color change to red

Question 10

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

Answer

The above solution could be a base or a neutral solution because blue litmus paper doesn't change its colour in the neutral as well as basic solution.

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

- (iv) only d