

Board – CBSE

Class – 7th

Topic – Acid , Bases and Salts

1. State the differences between acids and bases.

Ans.

-	Acids	Bases
(i)	These are sour to taste.	These are bitter to taste.
(ii)	Acids turn blue litmus red.	Bases do not change the colour of blue litmus.
(iii)	Acids do not change the colour of red litmus.	Bases turn red litmus blue. (iv)
(iv)	With china rose indicator, these give dark pink colour.	Bases give green colour with china rose indicator.
(v)	Acids do not change the colour of turmeric indicator.	Bases turn the colour of turmeric indicator to red.

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

Ans. Ammonia is basic in nature as it turns the colour of red litmus paper to blue.

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

Ans.

Solution	Colour of litmus solution
Acidic	Red
Basic	Blue
Neutral	No change

Litmus solution is obtained from lichens. A natural dye extracted from lichens is dissolved in distilled water to obtain litmus solution. It is used as an indicator to distinguish between acids and bases.

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

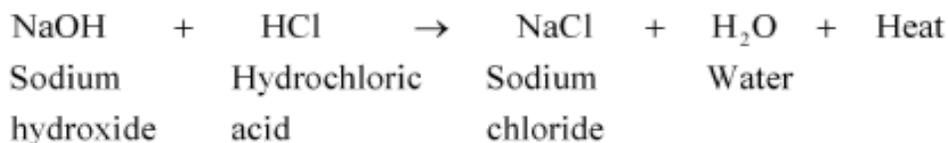
Ans. Distilled water is neutral in nature. The same can be verified by using red and blue litmus papers. Neither will show a colour change with distilled water. This proves that distilled water is neutral.

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

Ans. The reaction between an acid and a base is known as neutralization reaction. In this reaction, both acid and base cancel each other's effect. Neutralization reaction results in the formation of salt and water. During this reaction, energy in the form of heat is evolved.

Acid + Base → Salt + Water + Heat

For example, when sodium hydroxide (NaOH) is added to hydrochloric acid (HCl), sodium chloride (NaCl) and water (H₂O) are obtained.



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

(i) Nitric acid turns 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 colours in acidic and basic solutions. (T/F)

(v) Tooth decay is caused by the presence of a base. (T/F)

Ans. (i) Nitric acid turns red litmus blue. (F)

(ii) Sodium hydroxide turns blue litmus red. (F)

(iii) Sodium hydroxide and hydrochloric acid neutralize each other and form salt and water. (T)

(iv) Indicator is a substance which shows different colours in acidic and basic solutions. (T)

(v) Tooth decay is caused by the presence of a base. (F)

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?

Ans. Since the drinks are edible, Dorji can take the decision by tasting the drinks. Acidic drinks will be sour to taste whereas basic drinks will be bitter to taste and neutral drinks will have no taste. If Dorji has litmus indicator (solution or paper), then he can take its help. He should put one drop of each drink on blue litmus paper. If the colour of the litmus paper changes to red, then it is an acidic drink. Out of the remaining drinks, some are basic and some are neutral. Again, he should put one drop of the remaining drinks on red litmus paper. If the colour changes to blue, then it is basic and the others are neutral. In this way, he can serve all the three customers their respective drinks.

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.

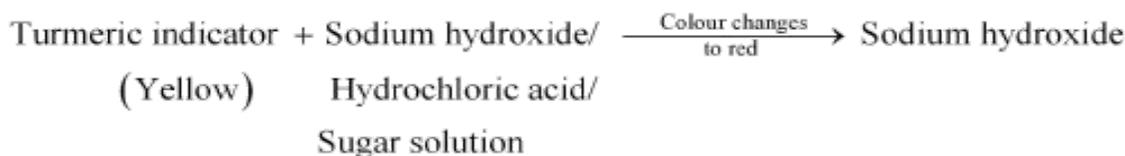
Ans. (a) This is because during acidity, an excess of acids is produced in the stomach. An antacid contains base, such as milk of magnesia. These bases react with excess of acids and neutralize their effect, thus giving us relief.

(b) When an ant bites, it injects formic acid into the skin. Calamine solution contains zinc carbonate which is basic in nature. Therefore, it is applied on the skin to neutralize the effect of formic acid.

(c) Factory wastes contain acids. Therefore, these wastes, when thrown directly to water bodies, harm aquatic lives. Hence, these wastes are neutralized with basic chemicals before disposing to water bodies.

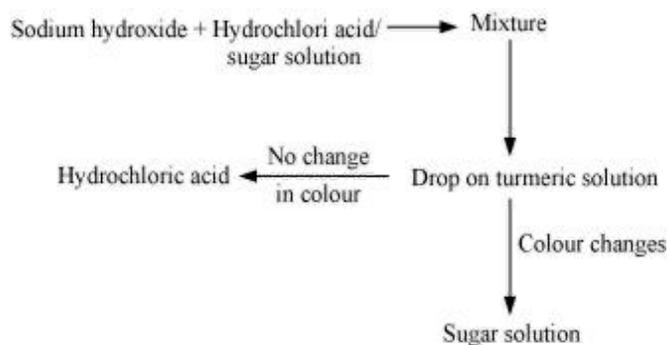
9. Three liquids are given to you. One is hydrochloric acid, another is sodium hydroxide and the third is a sugar solution. How will you identify them? You have only turmeric indicator.

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



Now, we will put a drop of sodium hydroxide on a drop of each of the other two liquids separately. After that, we will put the drops of these mixtures on turmeric indicator. The drop which will change the colour of the turmeric indicator to red contains sugar solution. This is because the mixture of basic and neutral solutions is basic in nature.

On the other hand, the drop which will not change the colour of turmeric indicator contains hydrochloric acid. This is because hydrochloric acid reacts with sodium hydroxide to form a neutral solution.



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

Ans. We know that basic and neutral solutions do not change the colour of blue litmus paper. Since blue litmus remains blue after dipping in the solution, the solution is either basic or neutral in nature. Put a drop of this solution on a red litmus paper. If it turns blue, then the above solution is basic in nature and if no colour change occurs, then it is neutral.

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

Ans. (iv) Only d is correct.