**Acids, Bases and Salts**

**I) Answer the following:**

**1. State differences between acids and bases.**

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| --- | --- |
| Acids | Bases |
| Acids are substances that taste sour and are corrosive in nature. | Bases are substances that, in aqueous solution, are slippery to touch and bitter in taste. |
| It turns blue litmus paper to red. | It turns red litmus paper to blue. |
| These substances are chemically acidic in nature. E.g.:-orange juice, curd, vinegar, hydrochloric acid etc. | These substances are chemically basic in nature. Eg:- soap, ammonium hydroxide, calcium hydroxide, etc |

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

Ans) Ammonia is used as a window cleaner which generally dissolves grease. It helps in eliminating stains and tarnishes by reacting with oils and fats. It is basic in nature.

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

Ans) Litmus solution is extracted from lichens. Litmus solution is used as an indicator to find acidic and basic nature of a solution.

Red litmus turns blue when tested with basic solution and remains red in acidic solution.

Blue litmus turns red when tested with acidic solution and remains blue in basic solution.

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

Ans) Distilled water is neutral in nature, and this can be tested by using red and blue litmus paper. In either of the cases, colour remains unchanged.

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

Ans) Neutralisation is a reaction between an acid and a base. Here, both acids and bases get neutralized and form salt and water. For example, when sodium hydroxide (NaOH) is added to hydrochloric acid (HCl), sodium chloride (NaCl) and water (H2O) are obtained.

7. **Dorji has a few bottles of soft drinks in his restaurant. But, unfortunately, these are not labelled. He has to serve the drinks on the demand of customers. One customer wants an acidic drink, another wants a basic drink, and the third one wants a 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 in taste whereas basic drinks will be bitter in taste and neutral drinks will have no taste.

He can also use litmus paper to identify acidic, basic and neutral drink.

1.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.

2. 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.

* **Explain why: (a) An antacid tablet is taken when you suffer from acidity.** Ans. (a) This is because during acidity, an excess of acid is produced in the stomach. An antacid contains a base, such as milk of magnesia. This base reacts with excess of acid and neutralize its effect, thus giving us relief.

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

(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 waste is neutralised before disposing into the water bodies.**

* (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.

**3.  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) The following steps are taken to test the given liquids:

* Put a drop of provided liquid on the turmeric indicator. The solution that changes the colour of the indicator to red is sodium hydroxide, which is basic in nature.
* Now, to make two mixtures, add a drop of sodium hydroxide on the other two liquids individually.
* The drop of each combination added to the turmeric indicator one after another.
* The mixture that changes the indicator to red colour includes a neutral solution of sugar.
* While the mixture contains hydrochloric acid that has been neutralised by the addition of sodium hydroxide, which does not show any colour change in the indicator.

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

Ans) The above solution may be neutral or basic in nature as both will not change the colour of the blue litmus paper.

**Extra questions.**

**1. Write a few properties of acids.**

Ans) Properties of acids are :

1.Acids are sour in taste.

3.Strong acids have a pungent smell.

4.They turn blue litmus paper into red.

5.They react very quickly with metals and liberate hydrogen gas.

6.Acid reacts with bases to form salt and water.( Neutralisation).

**2. Write the uses of acids.**

Ans) a)Hydrochloric acid: It is used to remove rust from metal, like iron, before putting it to any use.

b) hydrochloric acid is used in purification and refining of salts.

c) Sulphuric acid: It is used in the batteries of automobiles and inverters, in the manufacture of synthetic fibres like rayon

d) Nitric acid is used to make aqua regia and is very important component of explosives & synthetic fibres.

e) Acetic acid is commonly known as vinegar and it is common acid used in households.

**3. What do you understand by indicators? What are the different types of indicators? Give examples.**

Ans) There are some special substances which help us in identifying whether a substance is acidic or basic. These substances are called indicators. They change their colour when added to an acidic or basic solution.

Indicators are of two types : Natural and synthetic indicators.

Natural indictors can be extracted from parts of different plants.

Ex: Litmus, red cabbage extract, turmeric, china rose etc.

Synthetic indicators are used as acid base indicators.

Ex: Methyl orange , phenolphthalein etc.

**4. List the properties of bases.**

Ans• Bases taste bitter.

• Bases feel slippery.

• All bases are not soluble in water. Bases which are soluble in water are called alkalis.

• Bases react with acids to form salt and water.

**5. List some uses of bases.**

Ans) The uses of bases are as follows:

• Ammonium hydroxide: It is used as a window cleaner which generally dissolves grease. It helps in eliminating stains and tarnishes by reacting with oils and fats.

• Magnesium hydroxide: It is used as an antacid that acts as an agent to reduce acidity in the stomach.

• Sodium hydroxide: It is used for making soap, rayon, and paper.

**6. Give few examples of Acids, Bases and Salts.**

Ans) Acids: citric acid, oxalic acid, acetic acid, lactic acid, tartaric acid, formic acid, hydrochloric acid, nitric acid etc.

Bases: baking soda, sodium hydroxide, potassium hydroxide ,ammonium hydroxide (window cleaner), magnesium hydroxide, calcium hydroxide etc.

Salts: Sodium chloride ,Copper sulphate ,Magnesium chloride etc.