12. Introduction of Acid and Base

Practice Question

Q.1 Answer the following in detail.

1) Write the properties of Acid.

Ans.- 1) Alkali has sour taste acid molecules contain hydrogen ion (H^+) as a main constituent.

2) Acids reacts with metal to form hydrogen gas while acid reacts with carbonates and liberates CO_2 gas.

3) All acids are soluble in water. As less the value of pH, the property of acidity is more.

4) In acid, blue litmus paper changes to red. In chemical reaction, acid looses the proton and gain the pair of electron.

5) Electric current can be travels from aqueous solution of acid.

6) When acid and base react together mixture of salt and water is formed.

7) Some acids are concentrated ex. Hydrochloric acid (HCl), Sulphuric acid (H_2SO_4) while some acids are dilute eg citric acid, lactic acid.

8) The pH of acid is in between O to 6 g.

2) Write the properties of base or alkali.

Ans.- 1) Bases has bitter taste and sleeper in nature.

2) Alkali or Base contains hydroxide (OH^-) as main constituent while metal oxides are generally basic in nature.

3) Some base are concentrated while some base are dilute in nature. Concentrated base ex. Sodium hydroxide (NaOH), Potassium hydroxide (KOH), Dilute base ex. Sodium carbonate (Na2CO3).

4) All base are not soluble in water, while for more basicity the value of pH should be more.

5) In a chemical reaction, base gain the proton and loses the pair of electron.

6) Aqueous solution of base can conduct the electricity.

7) When base reacts with acid then mixture of water and salt formed.

8) The pH of base is in between 7.1 to 14.

3) Write the uses of base sodium hydroxide (NaOH).

Ans.- 1) Sodium hydroxide is used in manufacturing of artificial silk also it is used in soap, paper, color and chemical industries.

2) It is used as cleaning agent in machine and metal industry, also it is used as reactant in laboratory.

3) It is used for purification of oxides in aluminum extraction process, also it is used in manufacturing of soda lime.

4) Sodium Hydroxide is used in cotton mercerizing process and rubber reclaiming process.

4) Write the uses of base.

1) Potassium hydroxide is used in washing soap, shampoo manufacturing etc.

2) Calcium hydroxide is used for making lime.

3) Ammonium hydroxide is used for making fertilizers.

4) Magnesium hydroxide is used in manufacturing of medicine antacid.

5) Sodium hydroxide is used in manufacturing of washing soap.

Q. 2 Write short notes.

1. Indicators

Ans.- 1) The substance which is used to detect the nature of compound, i.e. whether it is acid, base or neutral, is known as indicators.

2) In a laboratory with the help of indicators we can identify the changes occurs in chemical reaction.

3) To taste or to touch the acid and base is harmful, so we used indicators for that.

4) The indicators used in laboratory are litmus paper, methyl orange, methyl red.

5) The domestic indicators are Turmeric, Radish, Red cabbage, Hibiscus, Tomato, Rose.

2) Litmus Paper

Ans.- 1) In laboratory, to amylase acid and base litmus paper is used.

2) Litmus paper is made by using extract of lichen.

3) Blue and Red litmus paper is used as indicator.

4) In acid, blue litmus changes to red while red litmus paper remains the red.

5) In base, blue litmus paper remaining the blue while red litmus becomes the blue colored litmus paper.

3) Domestic Indicator

Ans.- 1) On non-availability of laboratory indicators. ‘natural indicators’ can be made by using several domestic substance.

2) You must have seen yellow food stain turning red after washing with soap. This color change is a result of chemical reaction between turmeric and alkaline material of soap. Here turmeric acts as an indicator.

3) Natural indicators can also be prepared from red cabbage, radish, tomato and similarly from hibiscus and rose.

Q. Give reasons – Explain with reasons.

1) Medicine with basic property is used to cure indigestion.

Ans.- Hydrochloric acid is present in our stomach. If we eat too much food, this acid become excess in the body which leads to indigestion. After intake of medicine acid and base react together and

forms the salt and water. Hence, medicine with basic property is used to cure indigestion.

2) Do not add water in concentrated sulphuric acid.

Ans. Concentrated sulphuric acid is a severe acid. If water and acid get react together, then tremendous amount of energy can be formed which may cause severe blast. Due to this harmful injury can cause. Hence do not add water in concentrated sulphuric acid.

3) Use indicators to detect the substance.

Ans. Touching or tasting of acid or base is very harmful, it may cause harmful injury. Indicators are used for detection of acid, base and neutral substance, color change in acid indicators help in detection of acid base or base. Hence indicators are used to detection of nature of substance.

Q. 4 Write the definition.

1) Natural acid / Carbonic acid

Ans. The acid obtained from food items / natural product is called natural acid.

2) Natural indicators

Ans. The indicators made by using natural substances are called natural indicators.

3) Smell indicators

Ans. Smell of some substances changes in acid or base, these are known as smell indicators.

Q.5 Identify the relation.

1) _____ : Sour : : Base : Bitter

Ans. Acid.

2) Hydrochloric acid : ____ : : Oxalic acid : Dilute acid.

Ans. Concentrated acid.

Q.6 Identify the odd one.

1) Turmeric, Methyl Red, Litmus paper, phenolphthalein.

Ans. Turmeric (turmeric is a domestic indicator and others are indicators in laboratory.)

2) Acetic acid, Lactic acid, Tartaric acid, nitric acid.

Ans. Nitric acid (Other acids are dilute)

Q.7 State true or false.

1) Hereditary properties are defined by acid DNA.
Ans. True.

2) Proteins are made from fatty acids.
Ans. False (Proteins are made from amino acids).

3) Acid is used for conversion of wood into a whitish paper.
Ans. True.

4) H^+ ion is main constituent in base.
Ans. False (H^+ ion is main constituent in acid)

5) Reddish is a natural indicator.
Ans. True.

Q.8 Answer the following question in one line.

1) What is artificial indicators? Give examples.
Ans. Indicators made by using artificial substances are called as artificial indicators. Ex. Eosin, Methyl orange.

2) What is universal indicators?
Ans. A mixture of different indicators is known as universal indicators.

3) Which factor is present in turmeric for the yellow color?

Ans. Cur cumin factor is present in turmeric for the yellow color.

4) Fat in our body is made up from which substance?

Ans. Fat in our body is made up of fatty acid.

5) Which acid is used for disinfection of water?

Ans. Hydrochloric acid is used for disinfection of water.

6) Which acid present in orange and tomato?

Ans. In orange citric acid is present while in tomato oxalic acid is present. [

7) Which acid is present in our stomach?

Ans. Hydrochloric acid is present in our stomach.

8) What is concentrated and dilute acid?

Ans. When proportion of H+ ions in the aqueous solution of acid is more than it is called as concentrated acid while proportion of H+ ions in aqueous solution of acid is less then it is known as dilute acid.

9) What is mean Neutralization?

Ans. The process in which acid and base react together and forms salt and water, this process is known as neutralization.

10) What is mean ionization?

Ans. The acid and base dissolves in water, then their ions get separated, this process is known as ionization.