Acids, Bases and Salts

Q.1 State differences between acids and bases.

Sol:

Acids	Bases
1. Acids are sour in taste	1. Bases are bitter in taste
2. Acids turn blue litmus paper to red.	2. Bases turn red litmus paper to blue
3. Ex: Hydrochloric acid, Sulphuric Acid	3. Ex: Sodium hydroxide, Magnesium hydroxide etc.

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

Sol: Ammonia has basic nature.

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

Sol: This solution is extracted from Lichens. It is used to determine acidic or basic nature of given solution.

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

Sol: Distilled water is neutral. When we dip the litmus paper (Red and blue) into distill water, litmus paper does not show any changes in colour.

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

Sol: The reaction between an acid and a base is known as neutralization. Salts and water are produced in this process with the evolution of heat.

Acids + Bases --------> Salt + water

Ex: HCl + NaOH ---------> NaCl + H_2O.

Q.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 forms salts 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)

Sol:

(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 forms salts 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)

Q.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 it to be served to whom?

Sol: Dorji can decide by the use of litmus paper which is a indicator. If the soft drink turns red litmus paper to blue, then it is basic. If soft drink turns blue litmus paper to red, it is acidic. If it does not affect both litmus paper (Red and blue), then it is neutral.

Q.8 Explain why:

(a) An antacid tablet is taken when you suffer from acidity.

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

(c) Factory waste is neutralized before disposing it into the water bodies.

Sol:

(a) Antacids are the bases. When we suffer from acidity due to excess of acid in stomach, antacids are taken. Antacids neutralize the acids and relieve us.

(b) Ant injects an acid liquid (formic acid) into skin during bite which causes the burning sensation and inflammation. Calamine solution is basic in nature. It contains weak base zinc carbonate which neutralizes the acid and relieves from the pain.

(c) Since, factory wastes contain both acidic and basic substances. These are very harmful for the aquatic animals and plants. So, these are neutralized before disposing it into the water bodies.

Q.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.

Sol: As we add turmeric solution with bases turns to red. Turmeric solution is not affected by acids and neutral substances.

Firstly we identify the base. When we add base with turmeric. It will turn red. Then, one of the solution is mixed to it gradually. If the solution turns yellow again, the added liquid is Hydrochloric acid. Otherwise the added liquid is sugar solution.

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

Sol: The solution may be both type neutral or basic nature. Both types of solution have no change on blue litmus.

Q.11 Consider the following statements:

(a) Both acids and bases change colour at 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.

Sol: (ii) a and d