Question-1
You have been provided with three test tubes. One of them contains distilled water and the other two contain an acidic solution and a basic solution respectively. If you are given only red litmus paper, how will you identify the contents of each test tube?
Solution:
The contents of each test tube would be identified by change in colour of red litmus paper. For example, when we wet the red litmus paper with the basic solution, it changes into blue colour. Put the changed blue litmus paper in the solution which turns the blue to red will be the acidic solution. The solution, which has no effect on any litmus paper, will be neutral and hence it will be distilled water.

Question-2
Why should curd and sour substances not be kept in brass and copper vessels?
Solution:
Curd and other sour foodstuffs contain acids, which can react with the metal of the vessel to form poisonous metal compounds which can cause food poisoning and damage our health.
Question-3
Which gas is usually liberated when an acid reacts with a metal?
Solution:
When an acid reacts with metal, a salt and hydrogen gas is formed.
i.e

$$\text{Metal + Acid} \longrightarrow \text{Salt + Hydrogen gas.}$$

Question-4
Metal compound A reacts with dilute hydrochloric acid to produce effervescence. The gas evolved extinguishes a burning candle. Write a balanced chemical equation for the reaction if one of the compounds formed is calcium chloride.
Solution:
The gas that extinguishes a burning candle is carbon dioxide, which is formed by the action of dilute hydrochloric acid on a metal carbonate and produces effervescence. Now, since one of the compounds formed is calcium chloride, it shows that the metal compound is calcium carbonate. Thus, the metal compound A is calcium carbonate ($CaCO_3$). Calcium carbonate reacts with dilute hydrochloric acid to form calcium chloride, carbon dioxide and water. This can be written as:

Question-5
Why do HCl, HNO_3, etc., show acidic characters in aqueous solutions while solutions of compounds like alcohol and glucose do not show acidic character?
Solution:
An acid is a substance, which dissociates on dissolving in water to produce hydrogen ions [H^+(aq) ions]. The acids like HCl, H_2SO_4, HNO_3 and CH_3COOH, etc., show acidic character because they dissociate in aqueous solutions to produce hydrogen ions, H+(aq) ions.

The compounds such as glucose and alcohol also contain hydrogen but they do not show acidic character. The aqueous solutions of glucose and alcohol do not show acidic character because the hydrogen in them does not separate out as hydrogen ions [H^+ (aq) ions] on dissolving in water.

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