Question-13

Do basic solutions also have $H^+(aq)$ ions? If yes, why are these basic?

Solution:

No, the basic solution doesn't have H^+ ions as the solution has excess of hydroxide ions.

Question-14

Under what soil condition do you think a farmer would treat the soil of his fields with quick lime (calcium oxide) or slaked lime (calcium hydroxide) or chalk (calcium carbonate)?

Solution:

Most often the soil in the fields is too acidic. If the soil is too acidic (having low pH), it is treated with materials like quicklime (calcium oxide) or slaked lime (calcium hydroxide) or chalk (calcium carbonate). Thus, a farmer should add lime or slaked lime in his fields when the soil is too acidic.

Question-15

What is the common name of the compound $CaOCl_2$?

Solution:

The common name of the compound $CaOCl_2$ is bleaching powder.

Question-16

Name the substance that on treatment with chlorine yields bleaching powder.

Solution:

Calcium hydroxide is the substance that on treatment with chlorine yields bleaching powder.

Question-17

Name the sodium compound, which is used, for softening hard water.

Solution:

Sodium carbonate (washing soda) is used for softening hard water.

Question-18

What will happen if a solution of sodium hydro carbonate is heated? Give the equation of the reaction involved.

Solution:

Sodium carbonate and carbon dioxide are evolved when sodium hydro carbonate is heated.

$$2NaHCO_3 \xrightarrow{\text{heat}} Na_2CO_3 + H_2O + CO_2$$

Question-19

Write an equation to show the reaction between plaster of Paris and water.

Solution:

Plaster of Paris has a very remarkable property of setting into a hard mass on wetting with water. So, when water is added to plaster of Paris, it sets into a hard mass in about half an hour. The setting of plaster of Paris is due to the hydration crystals of gypsum, which set to form a hard, solid mass.

Question-20
Why does distilled water not conduct electricity, whereas rainwater does?
Solution:
Distilled water does not conduct electricity because it does not contain any ionic compound (like acids, bases or salts) dissolved in it. On the other hand, rain water conducts electricity. This can be explained as follows: Rain water, while falling to the earth through the atmosphere, dissolves an acidic gas carbon dioxide from the air and forms carbonic acid (H_2CO_3). Carbonic acid provides hydrogen ions, $H^+(aq)$, and carbonate ions, CO^{2-}_3 (aq), to rain water. So, due to the presence of carbonic acid (which provides ions to rain water), the rain water conducts electricity.

Question-21
Why do acids not show acidic behaviour in the absence of water?
Solution:
The acidic behaviour of acid is due to the presence of hydrogen ions. The acids will not show its acidic behaviour in the absence of water, this is because the acids produce hydrogen ions only in the presence of water.

********** END **********