SCIENCE
ACIDS, BASES AND SALTS

SALTS

28. A certain compound is alkaline in nature. On exposure to air, it turns into white opaque powder. Identify the compound.

Ans:- The alkaline compound is sodium carbonate.

29. Give the remarks on-

"Soda ash is the same as washing powder".

Ans:- Soda ash is Na_2CO_3 and washing soda is $Na_2CO_3.10H_2O$. One molecule of washing soda has ten molecules of water of crystallization. Fully anhydrous sodium carbonate is soda ash.

30. Give the different commercial forms of sodium carbonate.

Ans:- i) Soda ash - Na_2CO_3

ii) Washing soda crystals - $Na_2CO_3 .10H_2O$

iii) Carbonate powder - $Na_2CO_3. H_2O$.

31. Explain the term 'carbonation' in relation to the manufacture of washing soda by Solvay's process.

Ans:- Carbonation is a process in which brine (NaCl) saturated with ammonia is allowed to come in contact with carbon dioxide under pressure to form sodium bicarbonate.

$$NH_3\ (g) + H_2O(l) + CO_2\ (g) \rightarrow NH_4HCO_3(aq)$$

$$NH_4HCO_3(aq)+NaCl(aq)\rightarrow NH_4Cl(aq)+ NaHCO_3\ (s)$$

Sodium bicarbonate

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Life Processes

1. Why is diffusion insufficient to meet the oxygen requirements of multicellular organisms like humans?

Ans: Multi-cellular organisms like humans have very big bodies and require a lot of oxygen to diffuse into the body quickly in order to meet the oxygen requirement. Diffusion is a slow process which will take a lot of time to circulate oxygen to all the body cells. Because of its slow nature, diffusion is insufficient to meet the oxygen requirements of multicellular organisms like humans.

2. What criteria do we use to decide whether something is alive?

Ans: Walking, breathing, growth and other visible changes can be used to determine whether something is alive or dead. However, some living things will have changes that are not visible to our eye; Hence, the presence of the life process is a fundamental criterion to decide whether something is alive.

3. What are outside raw materials used for by an organism?

Ans: The outside raw material is used by organisms for food and oxygen. Raw materials' requirement varies on the complexity of the organism and the environment it is living.

4. What processes would you consider essential for maintaining life?

Ans:- Life processes such as respiration, digestion, excretion, circulation and transportation are essential for maintaining life.

5. Where do plants get each of the raw materials required for photosynthesis?

Ans: Plants require the following raw material for photosynthesis:

1. CO_2 is obtained from the atmosphere through stomata
2. Water is absorbed by plant roots from the soil.
3. Sunlight is an essential raw material for photosynthesis
4. Nutrients are obtained by soil by plant roots

6. What is the role of the acid in our stomach?

Ans: HCl present in the stomach dissolves food particles and creates an acidic medium. In an acidic environment,protein-digesting enzymes, pepsinogen, are converted into pepsin. HCl in the stomach also acts as a protective barrier against many disease-causing pathogens.

7. What is the function of digestive enzymes?

Ans:- Digestive enzymes break complex food molecules into simpler ones. This will make the food absorption process easy and effective. Absorbed food is transported to all parts of the body by the blood.

8. How is the small intestine designed to absorb digested food?

Ans:- The small intestine has small projections called microvilli, which increase the surface volume, making the absorption more effective. Within the villi, there are numerous blood vessels that absorb digested food and carry it to the bloodstream. Blood transports food to each part of our body.

9. What advantage over an aquatic organism does a terrestrial organism have with regard to obtaining oxygen for respiration?

Ans:- Terrestrial organisms breathe by using atmospheric oxygen, whereas aquatic organisms take oxygen dissolved in water. The oxygen level is high in the atmosphere when compared to oxygen in the water. Hence, terrestrial organisms need not breathe fast to obtain organisms, whereas aquatic organisms need to breathe faster to get the required oxygen.

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