ಎಸ್ಎಸ್ಎಲ್ಸಿ–ಇಂಗ್ಲಿಷ್ ಮಾಧ್ಯಮ

SCIENCE

ACIDS, BASES AND SALTS

23. What are bases? Give the characteristic of bases.

Ans:- Bases are the hydroxide of metals, which give hydroxide ion after dissociation in aqueous solution.

Characteristics of bases

i) They are bitter in taste.
ii) They change red litmus to blue.
iii) They react with acids to form salt and water.
iv) Common bases are soluble in water and are known as alkalies.

24. Name some common bases.

Ans:- Some Common bases are –

	Chemical name	Chemical formula
i) Caustic soda	Sodium hydroxide	NaOH
ii) Caustic potash	Potassium hydroxide	KOH
iii) Lime water	Calcium hydroxide	$Ca(OH)_2$
iv)Milk of magnesia	Magnesium hydroxide	$Mg(OH)_2$

25. Mention names of two oxides each which on reaction with water give acids and bases respectively.

Ans:- a) Sulphur dioxide (SO_2) and carbon dioxide (CO_2) react with water to give acids.

$$CO_2 + H_2O \rightarrow H_2CO_3$$

Carbonic acid

$$SO_2 + H_2O \rightarrow H_2SO_3$$

Sulphurous acid

b) Magnesium oxide (MgO) and calcium oxide (CaO) with water give bases.

$$MgO + H_2O \rightarrow Mg(OH)_2$$

Magnesium hydroxide

$$CaO + H_2O \rightarrow Ca(OH)_2$$

Calcium hydroxide

26. Why should curd and sour substances not be kept in brass and copper vessels?

Ans:- Curd and sour substances are acidic and acids react with brass and copper and so are not kept in brass and copper vessels.

27. Does acid solution conduct electricity?

Ans:- Yes, all acid solutions, whether mineral acids or organic acids, conduct electricity. They allow the passage of electric current through them.

28. Tap water conducts electricity whereas distilled water does not. Why?

Ans:- Tap water contains some impurities in the forms of salts. Due to presence of salts, it conducts electricity. Distilled water is free from all kinds of salts and hence does not conduct electricity.

29. While diluting an acid, why is it recommended that the acid should be added to water and not water to the acid?

Ans:- It is always desirable to add acid slowly to water, keeping the solution continuously stirred while preparing dilute solutions of acids, particularly nitric acid and sulphuric acid. We should always add acid to water, otherwise, so much heat is produced during the dilution process that the container, especially that of glass, may break. The hot contents may also cause an explosion and spill on our clothes and body. This may cut our clothes and also result into serious acid burns.

30. Which of the following aqueous solutions will conduct electricity?

Glucose, Hydrochloric acid, Acetic acid, Alcohol, Sulphuric acid, Sodium hydroxide.

Ans:- Hydrochloric acid, Acetic acid, Sulphuric acid, Sodium hydroxide.

31. A gas is produced when conc. H_2SO_4 is added to solid sodium chloride taken in a test tube. The gas coming out through the delivery tube is passed over a dry blue litmus paper and then over a moist blue litmus paper. What do we observe? Explain reason with the help of chemical equation.

Ans:- HCl gas is produced when conc. H_2SO_4 is added to sodium chloride

$$2NaCl(s) + H_2SO_4 \rightarrow 2HCl + Na_2SO_4$$

The gas will have no effect on dry blue litmus paper but it will change moist litmus paper to red. This is because HCl gas releases H^+ ions in water which gives it acidic properties.

32. Which of the following substances in water will not show acidic properties? Explain.

Sugar, Alcohol, Acetic acid, Urea, Nitric acid, Carbon dioxide

Ans:- Sugar, urea and alcohol do not show acidic properties in water as these do not furnish H^+ ions which are responsible for acidic properties.

33. What is the essence of all neutralization reactions?

Ans:- Since all acids generate $H^+(Aq)$ and bases generate OH^- (aq), all neutralization reactions are essentially combination of H^+ (aq) and OH^- (aq) to form water with the liberation of heat.

$$H^+(aq) + OH^-(aq) \rightarrow H_2O(l) + \text{heat}$$

34. How are base different from alkalies? Are all bases alkalies? Give examples.

Ans:- Bases generate hydroxide (OH^-) ions in water. For example,

$$NaOH(s) \xrightarrow{H_2O} Na^+(aq) + OH^-(aq)$$

$$KOH(s) \xrightarrow{H_2O} K^+(aq) + OH^-(aq)$$

$$Mg(OH)_2(s) \xrightarrow{H_2O} Mg^{2+}(aq) + 20H^-(aq)$$

Thus, NaOH, KOH and $Mg(OH)_2$ are bases. Alkalies are hydroxides of metals which dissolve in water. Thus, NaOH, KOH, $Ca(OH)_2$ etc. are alkalies also.

All bases are not alkalies. **Eg:-** Aluminium hydroxide $[Al(OH)]_3$ is a base but it is not fully soluble in water and so is not an alkali.

35. What is meant by dilution of an acid or base? Why is it done?

Ans:- Dilution of an acid or base means mixing an acid or base with water. This is done to decrease the concentration of ions (H_3O^+/OH^-) per unit volume. In this way the acid or the base is said to be diluted.

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