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Railways (Group-D & ALP) Science Questions with solution

RRB Science MCQs Quiz 4

Directions: Study the following questions carefully and choose the right answer:

1. Acids on reacting with metals release which of the following gases?

- A. Oxygen B. Carbon Dioxide C. Hydrogen D. Methane

2. Acids on reacting with metal carbonates release which of the following gases?

- A. Hydrogen sulphide B. Carbon Dioxide C. Propane D. Hydrogen

3. The reaction between an acid and a base to give a salt and water is known as a

- A. Neutralisation reaction B. Reduction reaction C. Oxidation reaction
D. Exothermic reaction

4. You take a small amount of bluish-grey copper oxide in a beaker and add dilute hydrochloric acid slowly. Stirring it, you notice the colour of the solution becomes blue-green. Why is this so?

- A. Due to heating up of copper oxide B. Due to formation of water
C. Due to formation of copper chloride D. All of the above

5. Non- metallic oxides are _____ in nature.

- A. Basic B. Acidic C. Neutral D. None of the above

6. Why should Curd not be kept in copper vessels?

I. Curd is acidic in nature.

II. Curd reacts with copper vessel.

III. The reaction between curd and vessels leads to the formation of hydrogen gas.

- A. Only I B. Only II C. Only I and III D. All of the above

7. Acids generate:

- A. Acids generate hydrogen ions. B. Bases generate hydroxide ions.
C. Both are correct D. Both are incorrect

8. A substance is mixed in water to form a solution and a drop of this solution is put on a litmus paper. It is observed that the paper turns red. What can be concluded about the nature of the solution?

- A. It is basic B. It is acidic C. It is neutral
D. More tests need to be done to conclude anything concrete.

9. The pH of a neutral solution is

- A. 0-7 B. 7 C. 7-14 D. None of the above

10. Vinegar contains

- A. Lactic acid B. Citric acid C. Oxalic acid D. Acetic acid



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Correct Answers:

1	2	3	4	5	6	7	8	9	10
C	B	A	C	B	D	C	B	B	D

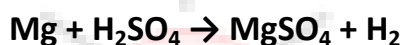
Explanations:

1.

Acids on reacting with some reactive metals result in the formation of a salt and hydrogen gas.

The general equation that describes the chemical reaction between an acid and metal is

Metal + acid = salt + hydrogen gas.



The hydrogen causes bubbling during the reaction. It can be detected using a **lighted matchstick**, which causes the gas to burn with a squeaky pop.

Hence, option C is correct.

2.

When an acid reacts with a metal carbonate, a salt, water and carbon dioxide are produced:



The carbon dioxide gas can be tested for by bubbling the gas produced through limewater, a dilute solution of calcium hydroxide. If the limewater turns milky, i.e. produces a white precipitate, then carbon dioxide is produced.

Limestone, chalk and marble are different forms of calcium carbonate. All metal carbonates and hydrogencarbonates react with acids to give a corresponding salt, carbon dioxide and water.

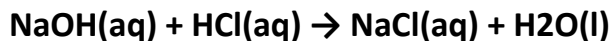


Hence, option B is correct.

3.

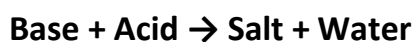
The effect of a base is nullified by an acid and vice-versa.

Example: Reaction of Sodium hydroxide with hydrochloric acid-



The reaction between an acid and a base gives a salt (NaCl) and water and is known as a neutralisation reaction.

In general, a neutralisation reaction can be written as –



Hence, option A is correct.

4.

When HCl reacts with copper oxide, Copper (II) chloride is formed which turns the solution blue-green. The reaction is as follows:



This is a double replacement reaction. Thus, the blue-green colour of the solution is due to the formation of copper(II) chloride in the reaction.

The general reaction between a metal oxide and an acid can be written as



Hence, option C is correct.

5.

Reaction between a non-metallic oxide and an acid leads to the formation of a salt and water. This is similar to the reaction between a base and an acid, we can conclude that nonmetallic oxides are acidic in nature.

Hence, option B is correct.

6.

Curd contains lactic acid too and is thus acidic. We know that acids react easily with metals to give salt and hydrogen gas. When kept in copper or brass vessels, curd reacts with copper and forms

toxic compounds which may be unfit for human consumption, and may cause food poisoning. Thus it is not advisable to keep curd and other acidic or sour food items in copper or brass vessels.

Hence, option D is correct.

7.

Acids, in presence of water, give hydrogen ions (H^+). Similarly, bases generate hydroxide (OH^-) ions in water.

Hence, option C is correct.

8.

A litmus paper states whether the solution is acidic or basic in nature. If the litmus paper turns red, the solution in question is acidic in nature while if it turns blue, the solution is basic in nature.

Hence, option B is correct.

9.

The pH scale is used for measuring hydrogen ion concentration in a solution. On the pH scale we can measure pH from 0 (very acidic) to 14 (very alkaline). Higher the hydronium ion concentration, lower is the pH value. The pH of a neutral solution is 7. Values less than 7 on the pH scale represent an acidic solution. As the pH value increases from 7 to 14, the solution turns more basic.

Hence, option B is correct.

10.

Vinegar contains acetic acid.

Hence, option D is correct.



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