

Intext Questions - Page 18

Q1. 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?

Answer:

- Dip red litmus paper into each solution:
 - The solution that **turns red litmus blue** is the **basic solution**.
 - The one that **does not change the colour** could be either **distilled water** or **acid**.
- Now, add a drop of the basic solution to the remaining two:
 - The one which still **does not change red litmus** is **distilled water** (neutral).
 - The remaining one is the **acidic solution** (no change in red litmus colour).

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Q1. Why should curd and sour substances not be kept in brass and copper vessels?

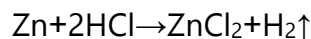
Answer:

Curd and sour substances contain acids like lactic acid. Acids react with metals like brass and copper to form **toxic salts** which are harmful for health.

Q2. Which gas is usually liberated when an acid reacts with a metal? Illustrate with an example. How will you test for the presence of this gas?

Answer:

- The gas evolved is **Hydrogen (H₂)**.
- Example:

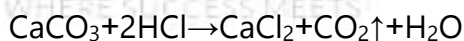


- Test: Bring a burning matchstick near the gas. If it burns with a '**pop**' sound, hydrogen gas is present.

Q3. 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.

Answer:

- Metal compound A is **Calcium carbonate (CaCO₃)**.
- The gas evolved is **carbon dioxide (CO₂)**.
- Balanced equation:

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Q1. Why do HCl, HNO₃, etc., show acidic characters in aqueous solutions while solutions of compounds like alcohol and glucose do not?

Answer:

HCl and HNO₃ ionize in water to give **H⁺ (or H₃O⁺)** ions, responsible for acidic properties.

Alcohol and glucose **do not release H⁺ ions** in water, so they do not show acidic character.

Q2. Why does an aqueous solution of an acid conduct electricity?

Answer:

Acids ionize in water to produce **free H⁺ ions**, which are **charged particles**. These ions conduct electricity.

Q3. Why does dry HCl gas not change the colour of the dry litmus paper?

Answer:

Dry HCl gas does not release **H⁺ ions** in the absence of water. Since ionization does not occur, it does not show acidic properties and does not change the litmus colour.

Q4. While diluting an acid, why is it recommended that the acid should be added to water and not water to the acid?

Answer:

The dilution of acid is **highly exothermic**. Adding acid to water allows the heat to disperse gradually.

If water is added to acid, it can cause **splattering and burns** due to sudden release of heat.

Q5. How is the concentration of hydronium ions (H₃O⁺) affected when a solution of an acid is diluted?

Answer:

On dilution, the **concentration of H_3O^+ ions decreases**, which means the **acidity decreases**.

Q6. How is the concentration of hydroxide ions (OH^-) affected when excess base is dissolved in a solution of sodium hydroxide?

Answer:

When excess base is added, the **concentration of OH^- ions increases**, making the solution **more basic**.

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Q1. You have two solutions, A and B. The pH of solution A is 6 and pH of solution B is 8. Which solution has more hydrogen ion concentration? Which of this is acidic and which one is basic?

Answer:

- Solution A has **more H^+ ion concentration** (pH 6).
 - Solution A is **acidic**, and solution B (pH 8) is **basic**.
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Q2. What effect does the concentration of H^+ (aq) ions have on the nature of the solution?

Answer:

- **Higher H^+ concentration** → **more acidic**
 - **Lower H^+ concentration** → **less acidic or basic**
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Q3. Do basic solutions also have H^+ (aq) ions? If yes, then why are these basic?

Answer:

Yes, basic solutions do have **some H^+ ions**, but they have **more OH^- ions**.

The solution is considered basic when **$OH^- > H^+$** .

Q4. Under what soil condition do you think a farmer would treat the soil of his fields with quick lime (CaO) or slaked lime ($Ca(OH)_2$) or chalk ($CaCO_3$)?

Answer:

When the soil is **too acidic**, farmers treat it with basic substances like **quick lime, slaked lime or chalk** to **neutralize the acidity**.

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Q1. What is the common name of the compound $Ca(ClO)_2$?

Answer:

The common name of $Ca(ClO)_2$ is **Bleaching Powder**.

Q2. Name the substance which on treatment with chlorine yields bleaching powder.

Answer:

Slaked lime ($Ca(OH)_2$) reacts with chlorine to form **bleaching powder**.

Q3. Name the sodium compound which is used for softening hard water.

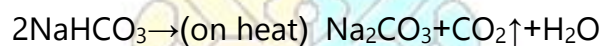
Answer:

Washing soda ($\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$) is used for softening hard water.

Q4. What will happen if a solution of sodium hydrogen carbonate is heated? Give the equation of the reaction involved.

Answer:

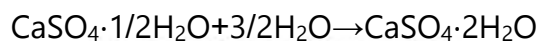
On heating, **sodium hydrogen carbonate (baking soda)** decomposes to form **sodium carbonate, carbon dioxide, and water**.



Q5. Write an equation to show the reaction between Plaster of Paris and water.

Answer:

Brain Booster Academy



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(Plaster of Paris) + Water → Gypsum