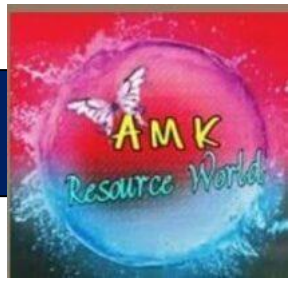

CLASS 10 – SCIENCE SOLUTIONS

CHPATER 2: ACIDS, BASES & SALTS

Q1. A solution turns red litmus blue, its pH is likely to be

Answer: (d) 10

Q2. A solution reacts with crushed egg-shells to give a gas that turns lime-water milky. The solution contains

Answer: (b) HCl

Q3. 10 mL of a solution of NaOH is found to be completely neutralised by 8 mL of a given solution of HCl. If we take 20 mL of the same solution of NaOH, the amount of HCl solution required to neutralise it will be

Answer: (d) 16 mL

Q4. Which one of the following types of medicines is used for treating indigestion?

Answer: (c) Antacid

Q5. Write word equations and then balanced equations for the reactions taking place when:

(a) Dilute sulphuric acid reacts with zinc granules.
Word equation:
Zinc + Sulphuric acid → Zinc sulphate + Hydrogen gas
Balanced chemical equation:
$Zn + H_2SO_4 \rightarrow ZnSO_4 + H_2\uparrow$

(b) Dilute hydrochloric acid reacts with magnesium ribbon.
Word equation:
Magnesium + Hydrochloric acid → Magnesium chloride + Hydrogen gas
Balanced chemical equation:
$Mg + 2HCl \rightarrow MgCl_2 + H_2\uparrow$

(c) Dilute sulphuric acid reacts with aluminium powder.
Word equation:
Aluminium + Sulphuric acid → Aluminium sulphate + Hydrogen gas
Balanced chemical equation:
$2Al + 3H_2SO_4 \rightarrow Al_2(SO_4)_3 + 3H_2\uparrow$

(d) Dilute hydrochloric acid reacts with iron filings.
Word equation:
Iron + Hydrochloric acid → Iron chloride + Hydrogen gas
Balanced chemical equation:
$Fe + 2HCl \rightarrow FeCl_2 + H_2\uparrow$

Q6. Compounds such as alcohols and glucose also contain hydrogen but are not categorised as acids. Describe an Activity to prove it.

Answer:
Set up a circuit with a bulb, battery, and beaker. Pour alcohol/glucose solution and check if the bulb glows. The bulb does not glow, proving they do not produce H^+ ions and thus are not acids.

Q7. Why does distilled water not conduct electricity, whereas rain water does?

Answer:
Distilled water lacks ions to conduct electricity. Rain water contains dissolved acids and salts, which ionise and allow conduction.

Q8. Why do acids not show acidic behaviour in the absence of water?

Answer:
Acids produce hydrogen ions (H^+) only in aqueous solutions, which are responsible for their acidic behaviour.

Q9. Five solutions A, B, C, D, and E show pH values 4, 1, 11, 7, and 9 respectively. Which solution is:

- (a) Neutral: D (pH 7)
- (b) Strongly alkaline: C (pH 11)
- (c) Strongly acidic: B (pH 1)
- (d) Weakly acidic: A (pH 4)
- (e) Weakly alkaline: E (pH 9)

Order of increasing hydrogen ion concentration: C < E < D < A < B

Q10. Equal lengths of magnesium ribbons are taken in test tubes A and B. HCl is added to A, CH_3COOH is added to B. Which test tube will fizz more vigorously and why?

Answer:
Test tube A will fizz more vigorously because HCl is a strong acid and produces more hydrogen ions than acetic acid (weak acid).

Q11. Fresh milk has a pH of 6. How will the pH change as it turns into curd? Explain.

Answer:
The pH will decrease (become more acidic) because lactic acid is formed during the curdling process.

Q12. A milkman adds a small amount of baking soda to fresh milk.

(a) Why does he shift the pH to slightly alkaline?

Answer:
To prevent milk from turning sour quickly by neutralising acids.

(b) Why does this milk take a long time to set as curd?

Answer:
Because an acidic medium is required for curdling; alkaline conditions delay it.

Q13. Plaster of Paris should be stored in a moisture-proof container. Why?

Answer:
Because it reacts with moisture to form hard gypsum, making it useless for further use.

Q14. What is a neutralisation reaction? Give two examples.

Answer:
A reaction between an acid and a base to form salt and water.Examples:

- $HCl + NaOH \rightarrow NaCl + H_2O$
- $H_2SO_4 + 2KOH \rightarrow K_2SO_4 + 2H_2O$

Q15. Give two important uses of washing soda and baking soda.

- Washing Soda:
  - Used in glass, soap, and paper industries.
  - Used for removing permanent hardness of water.
- Baking Soda:
  - Used for making baking powder.
  - Used as an antacid to relieve acidity.