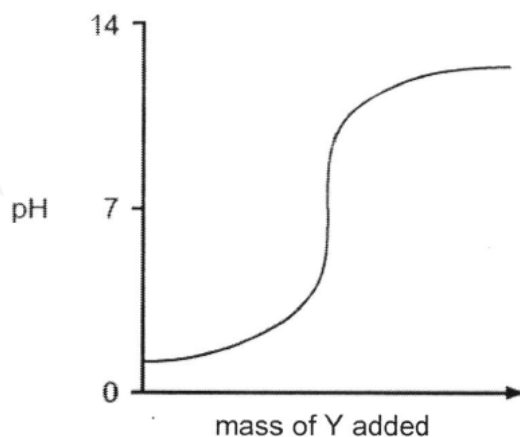


O Level Pure Chemistry MCQs

Acids and Bases Test 3.0

Q1

Solid Y was added bit by bit with stirring to an aqueous solution of Z.
The changes in pH of the mixture are shown in the graph.



Identify Y and Z.

	Y	Z
A	soluble metal oxide	hydrochloric acid
B	soluble metal oxide	sodium hydroxide
C	insoluble metal oxide	nitric acid
D	insoluble metal oxide	aqueous ammonia

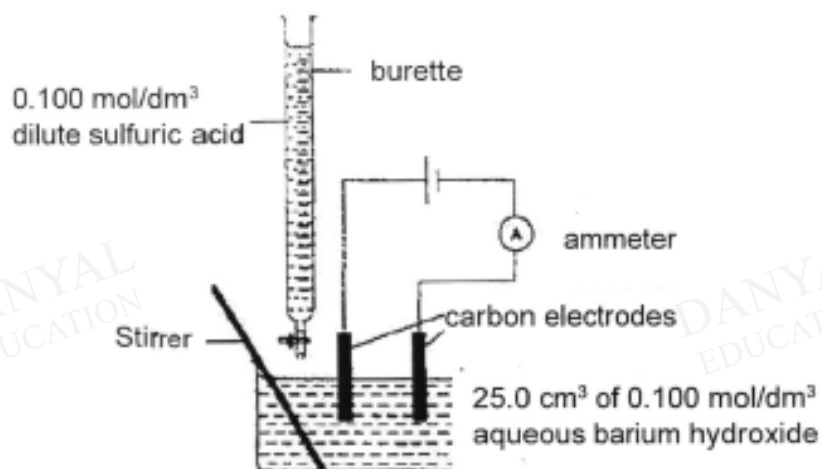
Q2

Which statement about alkali metals is true?

- A They form metal oxides with water.
- B They form covalent bonds with halogens.
- C Their reducing powers increase down the group.
- D Their melting and boiling points increase down the group.

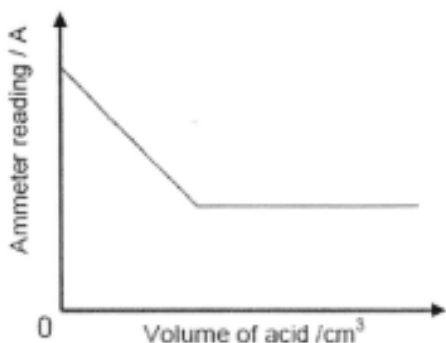
Q3

In an experiment, excess of 0.100 mol/dm^3 dilute sulfuric acid was added to 25.0 cm^3 of 0.100 mol/dm^3 aqueous barium hydroxide as shown in the diagram below.

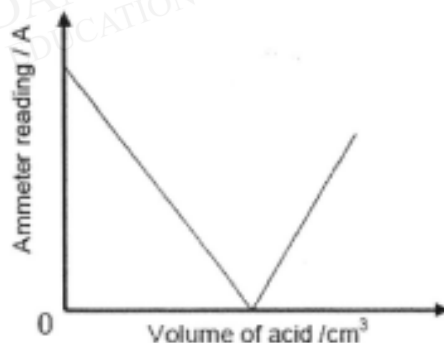


The acid was added from the burette in portions of 5 cm^3 until 40 cm^3 of the acid was added. After each addition, the solution was stirred and the ammeter reading was noted.

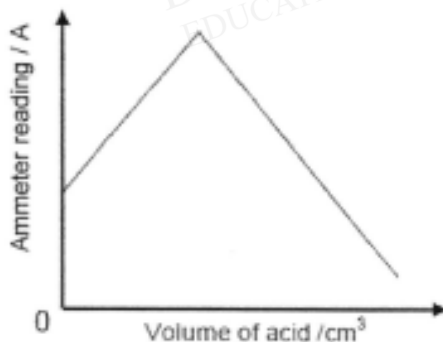
Which one of the following graphs correctly represents the relationship between the ammeter reading and the volume of acid added?



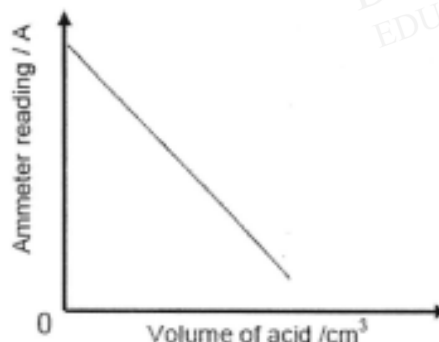
A



B



C



D

Q4

Zinc is heated in oxygen. The product obtained is yellow when hot and white when cold.

Which of the following will neutralise the product?

I aqueous sodium hydroxide

II dilute hydrochloric acid

III dilute sulfuric acid

A I only

B II only

C II and III only

D I, II and III

Q5

Which of the following pairs of compounds react together to produce ammonia?

1. solid calcium nitrate, solid lead(II) hydroxide and aluminium foil

2. solid calcium nitrate, aqueous sodium hydroxide and aluminium foil

3. solid ammonium sulfate and aqueous calcium hydroxide

4. solid ammonium sulfate and aqueous calcium nitrate

A 1 and 2 only

B 1 and 4 only

C 2 and 3 only

D 3 and 4 only

Q6

Which substance will dissolve in water to produce H^+ ions?

- A Calcium oxide
- B Carbon monoxide
- C Lead(II) oxide
- D Nitrogen dioxide

Q7

The properties of the oxides of four elements K, L, M and N in the third period of the Periodic Table are given below.

- The oxide of K is insoluble in water and dilute acid but is soluble in concentrated alkali.
- The oxide of L reacts with both dilute acid and dilute alkali.
- The oxide of M reacts with dilute alkali at room temperature.
- The oxide of N dissolves in water to form a strong alkaline solution.

If K, L, M and N are placed in order of increasing atomic number, which order is correct?

- A N, L, K, M
- B K, L, M, N
- C N, K, L, M
- D N, M, K, L

Q8

A sample of soil has a nitrogenous fertiliser in the form of an ammonium salt added to it. The ammonium salt dissolved in the water in the soil.

When tested a week later, the water in the soil contained 15.3% of dissolved nitrogen and had a pH of 4.6.

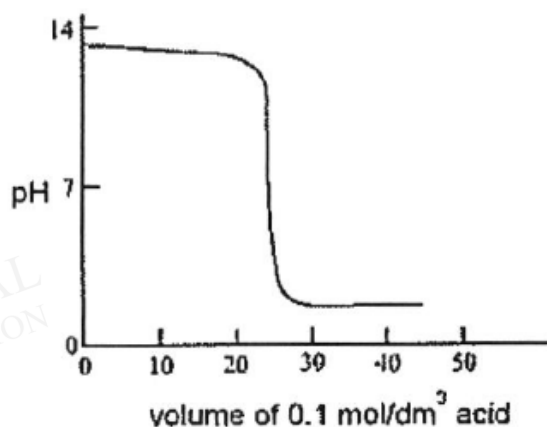
Calcium hydroxide was added to the soil and then the water in the soil was tested the next day, both for nitrogen content and pH.

What would be the most likely result of the final test?

	percentage of nitrogen	pH
A	11.4	4.6
B	12.7	6.9
C	15.3	4.6
D	15.3	6.9

Q9

The graph below represents the change in pH as 25 cm³ of a 0.1 mol/dm³ alkali solution is titrated with a 0.1 mol/dm³ acidic solution.



Which one of the following acid-alkali pairs could this graph represent?

- | | alkali | acid |
|---|------------------|-------------------|
| A | ammonia solution | ethanoic acid |
| B | ammonia solution | hydrochloric acid |
| C | sodium hydroxide | ethanoic acid |
| D | sodium hydroxide | hydrochloric acid |

Q10

The following statements about dilute sulfuric acid are all correct.

- 1 The solution reacts with copper(II) oxide, forming a blue solution.
- 2 The solution turns anhydrous copper(II) sulfate from white to blue.
- 3 A white precipitate is formed when aqueous barium chloride is added.
- 4 Addition of Universal Indicator shows that the solution has a pH value of less than 7.0.

Which two statements confirm the acidic nature of the solution?

- | | | | |
|---|---------|---|---------|
| A | 1 and 3 | B | 1 and 4 |
| C | 2 and 4 | D | 3 and 4 |

Answers

Acids and Bases Test 3.0

Q1 A

Q2 C

Q3 B

Q4 D

Q5 C

Q6 D

Q7 A

Q8 B

Q9 D

Q10 B

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