

Chem!stry

Name: ()

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Questions on Qualitative Analysis – Assignment 5 – Answers

Question 1:

Which two gases each change the colour of damp *red* litmus paper?

- A Ammonia and chlorine.
- B Ammonia and hydrogen chloride.
- C Carbon dioxide and chlorine.
- D carbon dioxide and sulphur dioxide.

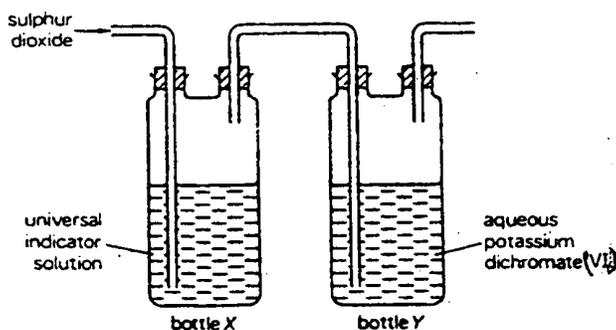
Question 2:

When testing for chloride ions using silver nitrate, the solution must be acidified with dilute nitric acid. What is the purpose of the nitric acid?

- A To act as a catalyst.
- B To oxidise the chloride ion.
- C To prevent the precipitation of silver carbonate.
- D To prevent the decomposition of any silver chloride formed.

Question 3:

Sulfur dioxide is passed through the apparatus shown in the diagram below:



What would be the final colours of the solutions in bottles X and Y?

- A Bottle X = green Bottle Y = green.
- B Bottle X = green Bottle Y = colourless.
- C Bottle X = red Bottle Y = orange.
- D Bottle X = red Bottle Y = green.

Question 4:

An aqueous solution of compound **X** reacts with aqueous sodium hydroxide to form a green precipitate. Next, aluminium powder is added and the mixture heated over a Bunsen burner. A gas that turns damp red litmus paper blue is produced. What is the identity of compound **X**?

- A Ammonium nitrate.
- B Copper(II) chloride.
- C Iron(II) nitrate.
- D Iron(III) chloride.

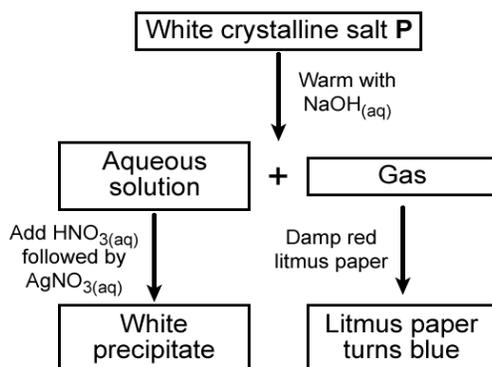
Question 5:

Which one of the following reagents could be used to distinguish between dilute nitric acid and dilute hydrochloric acid?

- A Aqueous barium chloride.
- B Copper(II) carbonate.
- C Aqueous silver nitrate.
- D Zinc carbonate.

Question 6:

A reaction scheme is shown in the diagram below:



What is the identity of the white crystalline salt **P**?

- A Aluminium sulfate.
- B Aluminium chloride.
- C Ammonium chloride.
- D Ammonium nitrate.

Question 7:

Aqueous barium chloride, acidified with dilute hydrochloric acid, gave a white precipitate when added to a sample of river water. Which ion was present in the river water?

- A Calcium.
- B Carbonate.
- C Chloride.
- D Sulphate.

Question 8:

An excess of aqueous sodium hydroxide was added to an aqueous solution of salt **X** and boiled. Ammonia gas was given off *only* after aluminium foil was added to the hot solution. What could **X** be?

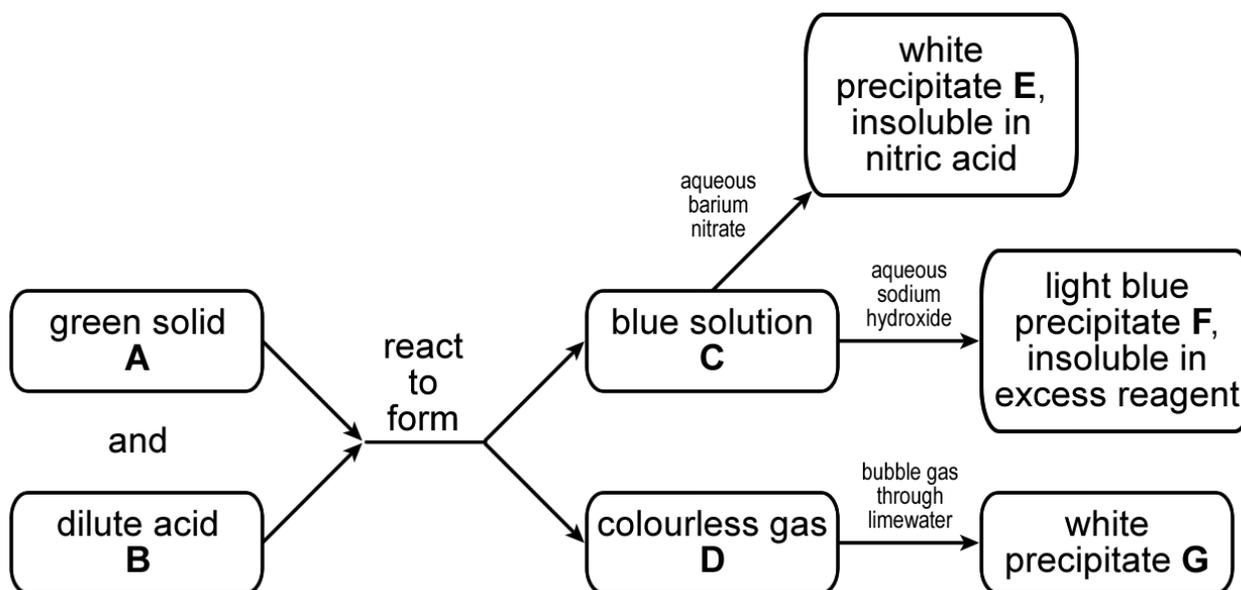
- A Ammonium chloride.
- B Ammonium nitrate.
- C Sodium chloride.
- D Sodium nitrate.

• Write your answers to the multiple-choice questions in the table below:

1: A	2: C	3: D	4: C	5: C	6: C	7: D	8: D
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Question 9:

Study the reaction sequence given below:



a) Identify the chemicals **A** to **G** by writing their *formulae* in the spaces provided below:

A is Copper(II) carbonate, CuCO_3

B is Sulfuric acid, H_2SO_4

C is Copper(II) sulfate, CuSO_4

D is Carbon dioxide, CO_2

E is Barium sulfate, BaSO_4

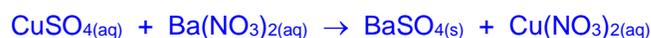
F is Copper(II) hydroxide, $\text{Cu}(\text{OH})_2$

G is Calcium carbonate, CaCO_3

b) Write the balanced chemical equation for the reaction between **A** and **B**, forming **C** and **D**:



c) Write the balanced chemical equation for the reaction between **C** and aqueous barium nitrate to form **E**:



d) Write the ionic equation for the reaction between **C** and aqueous sodium hydroxide to form **F**:



