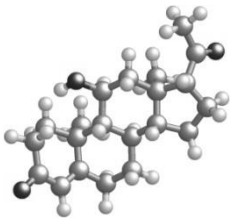


Chem!stry

Name: …… **( )**

Class: ……

Date: …… **/** …… **/** ……

Questions on Qualitative Analysis – Assignment 5

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.

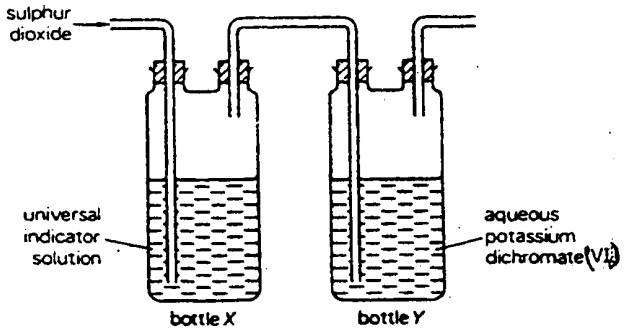
B To oxidise the chloride ion.

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.

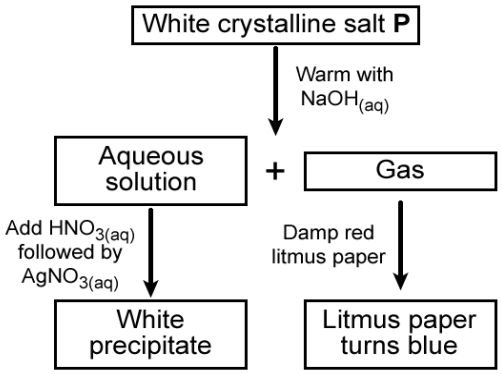
B Copper(II) carbonate.

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.

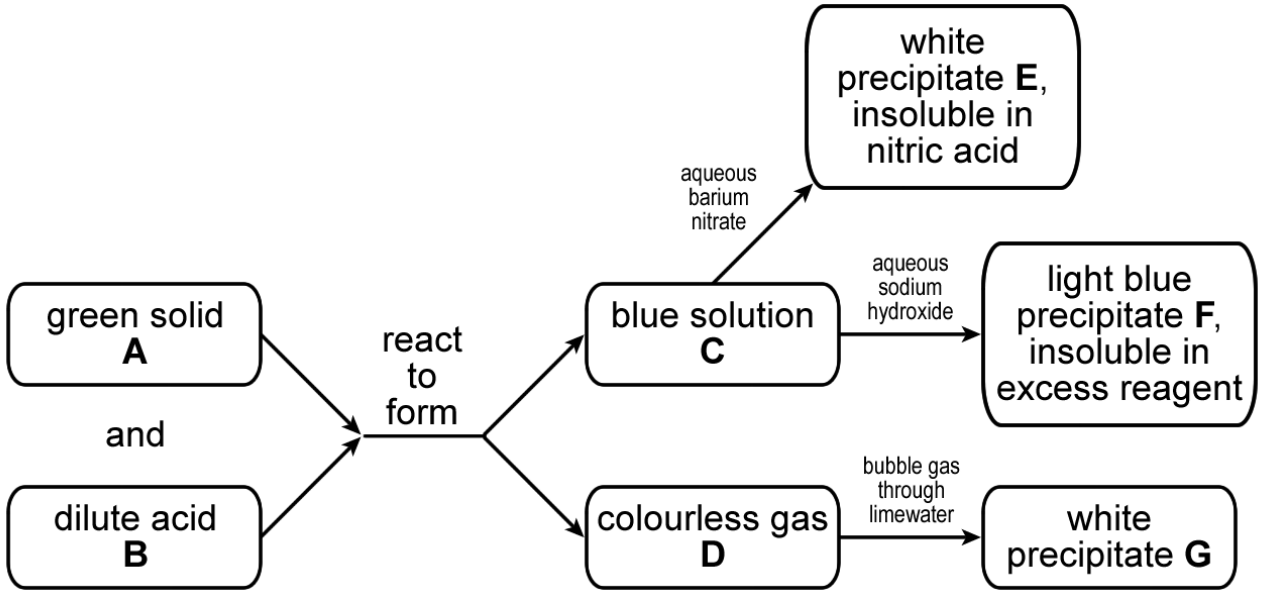
D Sodium nitrate.

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

1:	2:	3:	4:	5:	6:	7:	8:

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 …… **B** is ……

C is …… **D** is ……

E is …… **F** is ……

G is ……

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**:

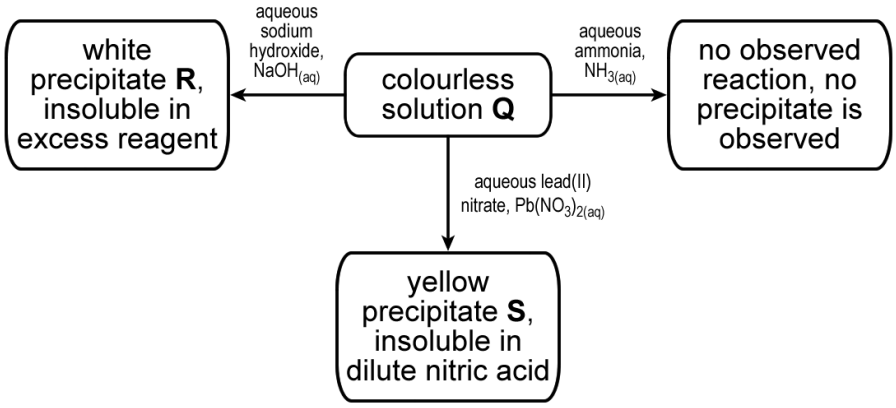
……

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

……

Question 10:

Study the reaction sequence given below:



a) Identify the chemicals **Q**, **R** and **S** by writing their formulae in the spaces provided below:

Q is …… **R** is ……

S is ……

b) Write the balanced chemical equation for the reaction between **Q** and aqueous sodium hydroxide to form **R**:

……

c) **i)** Write the balanced chemical equation for the reaction between **Q** and aqueous lead(II) nitrate to form **S**:

……..

ii) Write the ionic equation for the reaction between **Q** and aqueous lead(II) nitrate to form **S**:

……..

Question 11:

The following table shows the tests that a student did on a solution of substance **G**, and the deductions made from the observations. Complete the table by describing the *observations* that led to each of the deductions:

Test	Observation	Deduction
1 a) Add aqueous sodium hydroxide until a change is observed. **b)** Add excess aqueous sodium hydroxide.		Al^{3+}, Pb^{2+} or Zn^{2+} ions might be present.
2 a) Add aqueous ammonia until a change is observed. **b)** Add excess aqueous ammonia.		Al^{3+} or Pb^{2+} ions might be present.
3) Add dilute nitric acid followed by an aqueous solution of potassium iodide.		Pb^{2+} ions are present.
4) Add aqueous sodium hydroxide and aluminium foil. Gently warm the mixture over a Bunsen burner.		NO_3^- ions are present.

- Give the formula of substance **G**? ……

- Scan the QR code below for the answers to this assignment.

http://www.chemist.sg/qualitative_analysis/qa_assignment_5_ans.pdf