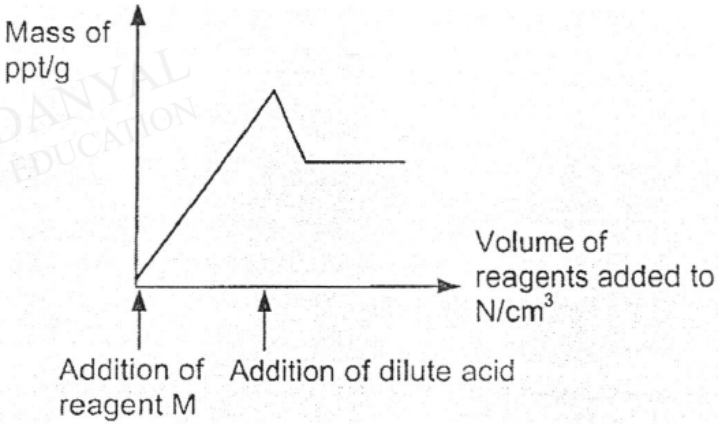
O Level Pure Chemistry MCQs

Qualitative Analysis Test 2.0

Q1

In a quantitative analysis, reagent M is gradually added to a salt solution N (that contains either 1 or 2 different anions), followed by the addition of a dilute acid. The graph below shows how the mass of precipitate formed changes with the reagents added.



Which of the following combinations would produce the given results?

	anion(s) in N	reagents (M and acid) added
A	CO_3^{2-}	add aqueous silver nitrate, followed by dilute nitric acid
B	Cl^-, CO_3^{2-}	add aqueous barium chloride, followed by dilute hydrochloric acid
C	SO_4^{2-}, CO_3^{2-}	add aqueous silver nitrate, followed by dilute hydrochloric acid
D	SO_4^{2-}, CO_3^{2-}	add aqueous barium chloride, followed by dilute hydrochloric acid

Q2

When sodium hydroxide solution is added to a solution containing potassium chloride and copper(II) nitrate, which of the following ions will decrease most in concentration?

A Cu^{2+} B K^+ C NO_3^- D Cl^-

Q3

When a few drops of nitric acid and aqueous barium nitrate were added to a solution of substance C, a white precipitate was seen. When aqueous sodium hydroxide was added to solution of substance C, a white precipitate that was insoluble in excess sodium hydroxide was seen.

What could C be?

A aluminium carbonate

B calcium sulfate

C lead(II) sulfate

D zinc chloride

Q4

The table shows the results of tests carried out to examine the air in an industrial area.

tests carried out with	observations
aqueous calcium hydroxide	white precipitate formed
anhydrous copper(II) sulfate	white solid turned blue
acidified potassium manganate(VII)	purple solution decolourised

Which of the following sets of gases was present in the sample of air?

A CO_2, H_2O, SO_2
B CO_2, H_2O, NO_2
C CO_2, H_2, SO_2
D CO_2, H_2, NO_2

Q5

When solid Y was added to dilute sulfuric acid, effervescence was observed and a colourless solution was obtained. When solid Y was warmed with aqueous sodium hydroxide and potassium nitrate, a pungent gas which turned damp red litmus blue was evolved. What could Y be?

A Copper

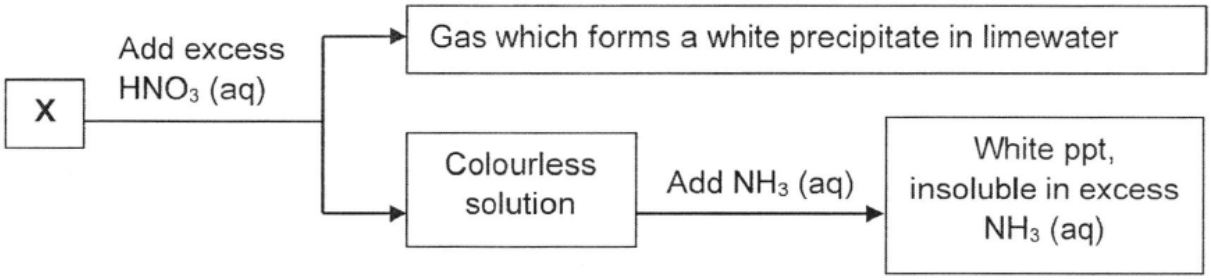
B Zinc

C Aluminum

D Aluminium carbonate

Q6

The flow chart below shows the reaction of compound **X.**



What can compound **X** possibly be?

A aluminium carbonate

B calcium carbonate

C lead (II) sulfate

D zinc carbonate

Q7

A salt has the chemical formula $(NH_4)_2Fe(SO_4)_2.12H_2O$. Excess aqueous sodium hydroxide was added slowly, with shaking, to a hot aqueous solution of the salt in a boiling tube until there is no further reaction. The boiling tube was then left to stand for some time.

Which observation will **not** be observed?

A A green precipitate was produced.

B A precipitate formed which dissolved in excess aqueous sodium hydroxide.

C A strong smelling gas was produced which turned damp red litmus paper blue.

D The precipitate slowly turned brown.

Q8

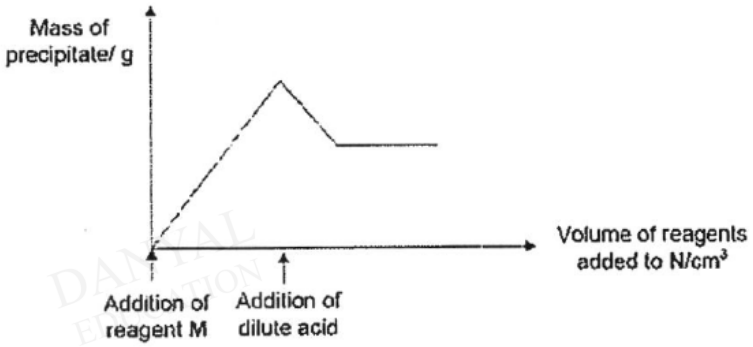
Two bottles in a laboratory are unlabelled. One bottle is known to contain aqueous sodium chloride and the other aqueous potassium sulfate.

Which of the following chemicals could be added to a sample of each solution to distinguish between the bottles?

A Aqueous calcium nitrate
B Aqueous iron(III) chloride
C Aqueous lead(II) nitrate
D Aqueous sodium hydroxide

Q9

In a reaction, reagent **M** is added gradually to a salt solution **N** that contains either 1 or 2 different anions, followed by the addition of a dilute acid. The graph below shows how the mass of precipitate formed changes with the reagent added.



Which of the following combinations would produce the given results?

	reagent **M**	dilute acid	anions in **N**
A	aqueous barium chloride	hydrochloric acid	Cl^-, CO_3^{2-}
B	aqueous barium chloride	hydrochloric acid	NO_3^-
C	aqueous silver nitrate	nitric acid	Cl^-, CO_3^{2-}
D	aqueous silver nitrate	nitric acid	NO_3^-

Q10

Two tests were carried out on solution X.

No	Test	Observations
1	Excess aqueous sodium hydroxide is added to solution X and the mixture is heated.	White precipitate dissolves. Gas that turned moist litmus blue is given off.
2	Aqueous sodium chloride was added to solution X.	A white precipitate is formed.

Which ions are present in X?

A NH_4^+ and Zn^{2+}

B NH_4^+ and Pb^{2+}

C NO_3^- and Zn^{2+}

D NO_3^- and Pb^{2+}

Answers

Qualitative Analysis Test 2.0

Q1 D

Q2 A

Q3 B

Q4 A

Q5 C

Q6 A

Q7 B

Q8 A

Q9 C

Q10 B