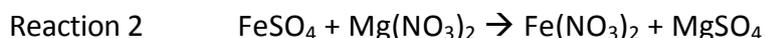
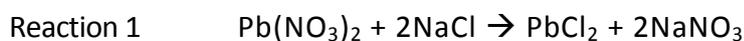


### Precipitation Practice Questions

Nitrates, NO <sub>3</sub> <sup>-</sup>	All <b>soluble</b>
Chlorides, Cl <sup>-</sup>	All <b>soluble</b> except AgCl, PbCl <sub>2</sub>
Sulfates, SO <sub>4</sub> <sup>2-</sup>	All <b>soluble</b> except BaSO <sub>4</sub> , PbSO <sub>4</sub> , CaSO <sub>4</sub>
Hydroxides, OH <sup>-</sup>	All <b>insoluble</b> except KOH, NaOH
Carbonates, CO <sub>3</sub> <sup>2-</sup>	All <b>insoluble</b> except K <sub>2</sub> CO <sub>3</sub> , Na <sub>2</sub> CO <sub>3</sub>

#### Question One

Each of the following equations shows what could happen when two solutions are mixed in a beaker.



Use the solubility rules in your Resource Booklet to identify **which reaction would form a precipitate**.

Justify your answer by:

- identifying the ions present in each solution before they are mixed
- identifying the precipitate formed when the solutions are mixed
- explaining why that precipitate forms.

#### Question Two

The following pairs of solutions are mixed. Use the solubility rules in your Resource Booklet to identify if a precipitate is formed.

(a) Write the **name** of **the** precipitate. If none is formed, write **no** precipitate.

	Solutions that are mixed	Name of the Precipitate, OR No Precipitate
(i)	Silver nitrate + calcium chloride	
(ii)	Potassium sulfate + iron(II) nitrate	
(iii)	Calcium nitrate + sodium sulfate	

(b) Write a balanced equation for the formation of ONE precipitate identified in (a). Spectator ions may be omitted from ionic equations.

### Question Three

Complete the following word equation. Lead nitrate + potassium chloride →

### Question Four

A colourless solution of barium nitrate is added to a pale green solution of iron(II) sulfate in a beaker. A reaction occurs.

- Describe the observations that would be expected for this reaction.
- State what type of reaction is occurring.
- Discuss the chemistry of this reaction. Your discussion should refer to the observations you made in part (a). Include a balanced equation in your answer. Spectator ions may be omitted.

### Question Five

The following solutions are mixed in the pairs shown. Use the solubility rules in your Resource Booklet to identify the precipitate (if any) that is formed for each pair.

- Write the name of the precipitate or, if none is formed, write no precipitate.

	Solutions that are mixed	Name of precipitate, or no precipitate
(i)	Sodium chloride and copper nitrate	
(ii)	Lead nitrate and potassium chloride	
(iii)	Potassium hydroxide and magnesium sulfate	

- Write a balanced equation for the formation of ONE precipitate identified in (a) above. Spectator ions may be omitted from ionic equations.

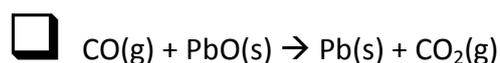
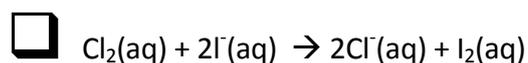
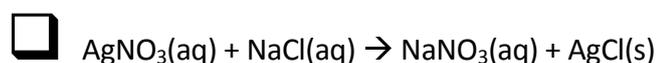
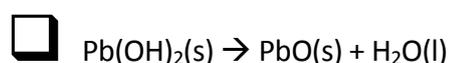
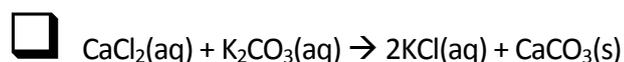
### Question Six

Complete the following word equation

Barium chloride + magnesium sulfate →

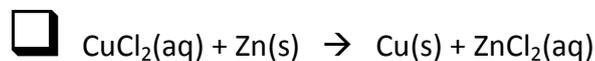
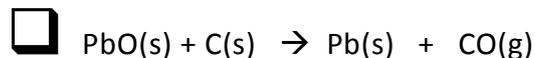
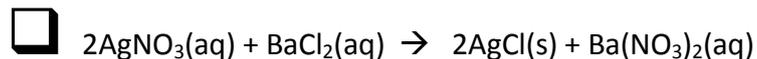
### Question Seven

Which of the follow reaction(s) is/are precipitation? (Tick answer(s))



### Question Eight

Which of the follow reaction(s) is/are precipitation? (Tick answer(s))



### Question Nine

The following solutions are mixed in the pairs shown. Use the solubility rules in your Resource Booklet to identify the precipitate (if any) that is formed for each pair.

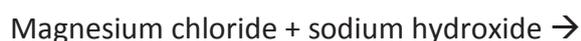
(a) Write the name of the precipitate or, if none is formed, write no precipitate.

	Solutions that are mixed	Name of precipitate, or no precipitate
(i)	calcium nitrate and sodium sulfate	
(ii)	copper chloride and potassium hydroxide	
(iii)	magnesium sulfate and sodium chloride	

(b) Write a balanced equation for the formation of ONE precipitate identified in (a) above. Spectator ions may be omitted from ionic equations.

### Question Ten

Complete the following word equation



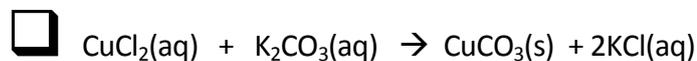
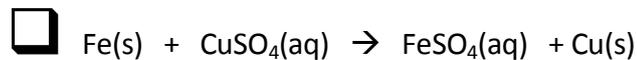
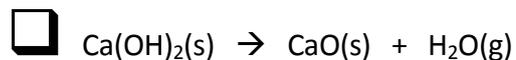
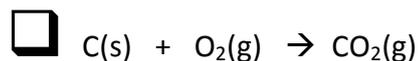
### Question Eleven

Iron (II) nitrate solution is added to sodium hydroxide solution in a test tube.

- (i) Describe ONE observation that you would make as the reaction occurs.
- (ii) Explain why your observation occurred.
- (iii) Write a balanced ionic equation for this reaction.

**Question Twelve**

Which of the follow reaction(s) is/are precipitation? (Tick answer(s))



**Question Thirteen**

The following solutions are mixed in the pairs shown. Use the solubility rules in your Resource Booklet to identify the precipitate (if any) that is formed for each pair.

Write the name of the precipitate or, if none is formed, write no precipitate.

	Solutions that are mixed	Name of precipitate, or no precipitate
(i)	magnesium sulfate and calcium nitrate	
(ii)	lead nitrate and sodium chloride	
(iii)	potassium carbonate and zinc sulfate	

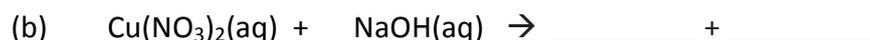
**Question Fourteen**

Complete the following word equation



**Question Fifteen**

Complete & balance these equations



**Question Sixteen NOTE iron(III) hydroxide not examined from 2012 onwards**

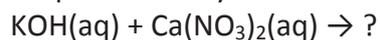
A solution of sodium hydroxide is added to a solution of iron (III) chloride.

(a) Describe ONE observation that would be made.

(b) Write a balanced equation for this reaction.

### Question Seventeen

Discuss what happens when a solution of potassium hydroxide is added to a solution of calcium nitrate.



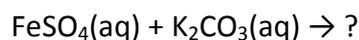
In your answer:

- describe the observations you would make
- predict the products that will form
- explain what happens to **each ion** present in the solutions used in this reaction
- write a net ionic equation for the precipitation reaction.

The net ionic equation for the precipitation reaction is:

### Question Eighteen

When a fresh solution of iron(II) sulfate is added to a solution of potassium carbonate, a precipitate forms.



Discuss the process of this precipitation reaction.

In your answer:

- State any observations you would make.
- Explain what happens to each ion present in the solutions used in this reaction.
- Write the name or formula of the precipitate formed.
- Write a balanced equation (spectator ions may be omitted).

Refer to the solubility rules provided in the Resource Booklet.

### Question Nineteen

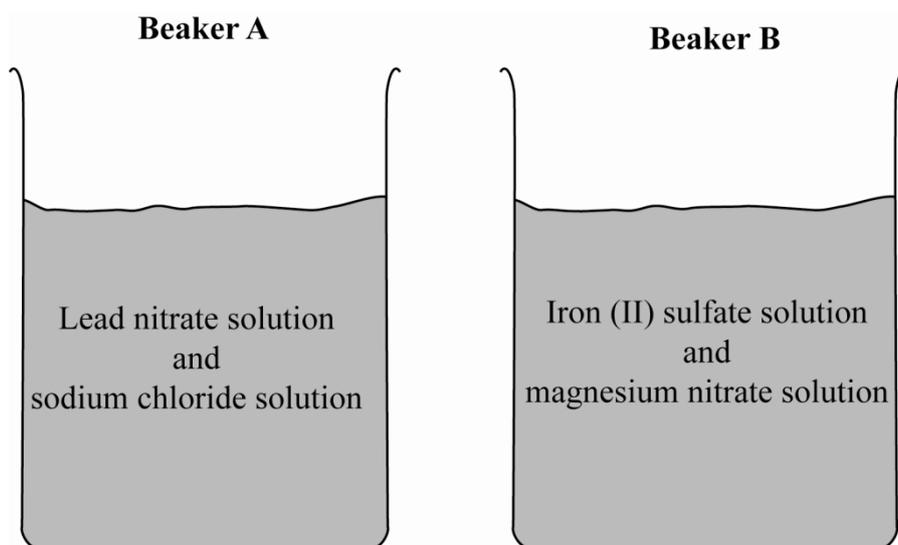
A chemical reaction occurs when a solution of calcium nitrate is added to a solution of sodium hydroxide.

Analyse this reaction by:

- describing any observations that would be made
- identifying the products
- explaining what happens to EACH ion that is present in these two solutions
- writing a balanced symbol equation for this reaction. (Spectator ions may be omitted.)

**Question Twenty**

Two solutions are mixed in one beaker and two different solutions are mixed in another beaker, as shown in the diagram below. A precipitate forms in one of the beakers.



Identify the beaker in which a precipitate would form and justify your choice. In your answer, you should:

- state which beaker the precipitate would form in
- name the ions present in that beaker before they are mixed
- name the precipitate formed (use the solubility rules in the resource booklet)
- write a balanced symbol equation for the precipitation reaction
- fully explain why no other precipitate will form in that beaker.