

IGCSE Questions on Acids 2

1 State whether each of the following is soluble or insoluble in water. [14]

Substance	Soluble/Insoluble?	Substance	Soluble/Insoluble?
Silver nitrate		KOH	
Potassium sulfate		Na <sub>2</sub> SO <sub>4</sub>	
Copper carbonate		Cu(OH) <sub>2</sub>	
Iron(II) hydroxide		Pb(NO <sub>3</sub> ) <sub>2</sub>	
Zinc chloride		BaSO <sub>4</sub>	
Silver chloride		Na <sub>2</sub> CO <sub>3</sub>	
Ammonium sulfate		CoCO <sub>3</sub>	

2 There are three methods for making salts:

**Method 1:** reaction of an acid and alkali – **titration**

**Method 2:** add an **excess** of a **solid base** or **metal** or **carbonate** to an acid

**Method 3:** mix two solutions and obtain an insoluble salt by **precipitation**.

Choose a suitable method for making each of the salts below. In each case give the names of the reagents you would use. [10]

(a) Copper(II) chloride                                  Method.....

Reagents.....

(b) Lead(II) sulfate                                  Method.....

Reagents.....

(c) Potassium sulfate                                  Method.....

Reagents.....

(d) Zinc nitrate                                  Method.....

Reagents.....

(e) Barium sulfate                                  Method.....

Reagents.....

3 Explain why titration cannot be used to make copper(II) sulfate. [2]

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4 Explain how you would test to see whether a solution you are heating is close to saturated. [2]

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 .....

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5 (a) Fill in the gaps below to show how the soluble salt, sodium sulfate, could be made using titration. [14]

25 cm<sup>3</sup> of ..... was measured out using a .....

This was transferred to a ..... and a few drops of ..... added.

Sodium hydroxide was put in the ..... and added to the ..... until the ..... changed colour.

This procedure was repeated using exactly ..... but without the .....

The resulting solution was transferred to an ..... and heated in order to ..... When the solution was close to ..... heating was stopped and the reaction mixture was ..... until ..... formed.

(b) Write a balanced symbol equation for the reaction in (a) [3]

6 A student suggested the following method for making a pure, dry sample of sodium chloride crystals:

- Add excess solid sodium carbonate to 25 cm<sup>3</sup> of 0.10 mol/dm<sup>3</sup> hydrochloric acid
- Stir until the fizzing has stopped
- Filter off the excess sodium carbonate
- Heat the filtrate to evaporate off some of the water then allow to crystallise
- Filter off the crystals and allow to dry in a warm oven

Explain why this method will **not** work. [2]

7 A student suggested the following method to make a pure, dry sample of lead(II) sulfate.

- Add excess solid lead(II) oxide to 25 cm<sup>3</sup> of hot 0.10 mol/dm<sup>3</sup> sulfuric acid
- Stir then filter off the excess lead(II) oxide
- Heat the filtrate to evaporate off some of the water then allow to crystallise
- Filter off the crystals and allow to dry in a warm oven

Explain why this method will **not** work. [2]