Practice Question Set For A-Level
Subject : Chemistry
Paper-1 Topic: Inorganic 1

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Name of the Student:_____
Max. Marks : 19 Marks **Time : 19 Minutes**

Q1.

A sample of strontium ore is known to contain strontium oxide, strontium carbonate and some inert impurities. To determine the mass of strontium carbonate present, a student weighed a sample of the solid ore and then heated it in a crucible for 5 minutes. The sample was allowed to cool and then reweighed. This heating, cooling and reweighing was carried out three times.

The results are set out in the table.

Mass of crucible / g	9.85
Mass of crucible and ore sample / g	16.11
Mass of crucible and sample after first heating / g	14.66
Mass of crucible and sample after second heating / g	14.58
Mass of crucible and sample after third heating / g	14.58

(a) When strontium carbonate is heated it decomposes according to the following equation.

$$SrCO_3 \longrightarrow SrO + CO_2$$

Give a reason why the mass of the solid sample changed during the experiment.

_____

_____

_____

(1)

(b) Use the data in the table to calculate the mass of strontium carbonate in the original ore sample. Give your answer to an appropriate precision.

Mass of strontium carbonate = ___ g

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(5)

(c) Each balance reading has an uncertainty of ±5.00 mg.

Calculate the percentage error in the initial mass of ore used.

Percentage error = _____ %

(1)

(d) The mass of inert impurities in the sample was 347 mg.

Deduce the mass of SrO in the sample and justify any assumption made in calculating your answer.
(If you have been unable to answer part **(b)**, assume the mass of strontium carbonate was 4.85 g. This is **not** the correct answer.)

Mass of SrO = _____

_____

_____

(2)

(e) Strontium metal can be extracted by heating strontium oxide with aluminium metal.

In this reaction, strontium vapour and solid aluminium oxide are formed.

Write an equation for the reaction and state the role of the aluminium in the process.
Explain why strontium forms a vapour but aluminium oxide is formed as a solid.

Equation

_____

Role of aluminium _____

_____

Explanation _____

_____

_____

_____

_____

_____

_____

(5)

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(Total 14 marks)

Q2.

This question is about the chemistry of some Group 2 elements.

(a) Write an equation for the reaction of calcium with water at 25 °C and predict a possible value for the pH of the solution formed.

Equation

_____

pH _____

(2)

(b) State the trend in solubility, in water, of the Group 2 sulfates from magnesium to barium.

_____

(1)

(c) State the trend in solubility, in water, of the Group 2 sulfates from magnesium to barium.

Reagent _____

Equation

_____

(2)

(d) Explain why the melting point of calcium sulfate is high.

_____

_____

_____

_____

_____

_____

_____

(2)

(Total 7 marks)

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