

Name of the Student: _____

Max. Marks : 17 Marks

Time : 17 Minutes

Q1.

This question is about the elements in Group 2 and their compounds.

- (a) Use the Periodic Table to deduce the full electron configuration of calcium.

_____ (1)

- (b) Write an ionic equation, with state symbols, to show the reaction of calcium with an excess of water.

_____ (1)

- (c) State the role of water in the reaction with calcium.

_____ (1)

- (d) Write an equation to show the process that occurs when the first ionisation energy of calcium is measured.

_____ (1)

- (e) State and explain the trend in the first ionisation energies of the elements in Group 2 from magnesium to barium.

Trend _____

Explanation _____

(3)

(Total 7 marks)

Q2.

The table below shows observations of changes from some test-tube reactions of aqueous solutions of compounds **Q**, **R** and **S** with five different aqueous reagents. The initial colours of the solutions are not given.

	BaCl₂ + HCl	AgNO₃ + HNO₃	NaOH	Na₂CO₃	HCl (conc)
Q	no change observed	pale cream precipitate	white precipitate	white precipitate	no change observed
R	no change observed	white precipitate	white precipitate, dissolves in excess of NaOH	white precipitate, bubbles of a gas	no change observed
S	white precipitate	no change observed	brown precipitate	brown precipitate, bubbles of a gas	yellow solution

- (a) Identify each of compounds **Q**, **R** and **S**.
You are **not** required to explain your answers.

Identity of **Q** _____

Identity of **R** _____

Identity of **S** _____

(6)

- (b) Write ionic equations for each of the positive observations with **S**.

(4)

(Total 10 marks)