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.

This question is about the identification of ions in unknown solutions.

A student completes a number of test-tube reactions on solutions **A**, **B** and **C**.

The table below shows the student's observations.

	Test 1	**Test 2**	**Test 3**
	Add $H_2SO_4(aq)$	Warm with NaOH(aq)	Add acidified $AgNO_3(aq)$
A	white precipitate	no visible change	no visible change
B	effervescence	a gas is formed that turns damp red litmus blue	effervescence
C	no visible change	no visible change	off-white precipitate

(a) Suggest the identity of the positive ion in solution **A**.

Give the simplest ionic equation for the formation of the white precipitate in **Test 1** for solution **A**.

Identity of positive ion in **A** _____

Ionic equation

_____

(2)

(b) Different gases are formed when solution **B** reacts in **Test 1** and in **Test 2**.

Suggest the identity of each gas.

Give the simplest ionic equation for the formation of the gas in **Test 2**.

Gas formed in **Test 1** _____

Gas formed in **Test 2** _____

Ionic equation for the formation of the gas in **Test 2**

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_____

(2)

(c) The student thinks that solution **C** contains either chloride ions or bromide ions.

Describe a further test, or tests, to show whether solution **C** contains chloride or bromide ions.

_____

_____

_____

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_____

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_____

(3)

(Total 7 marks)

Q2.

This question is about elements in Period 3 and their compounds.

(a) When a piece of sodium is added to 200 cm^3 of water in a large beaker a vigorous reaction occurs. The temperature of the water increases by 25 ^oC

Give an equation, including state symbols, for the reaction of sodium with water.

Suggest why it is dangerous to react a similar piece of sodium with 10 cm^3 of water in a boiling tube.

Equation

_____

Why it is dangerous _____

_____

_____

(2)

(b) Give an equation for the reaction of phosphorus(V) oxide with water.

Suggest a pH for the solution formed.

Equation

_____

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pH _____

(2)

(c) Explain, in terms of crystal structure and bonding, why silicon(IV) oxide has a higher melting point than phosphorus(V) oxide.

_____

_____

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_____

_____

_____

(4)

(d) An element in Period 3 forms an oxide that is insoluble in water.
This oxide reacts with sulfuric acid and with aqueous potassium hydroxide.

Give the formula for this oxide.

Give an equation for the reaction of this oxide with sulfuric acid.

Formula _____

Equation

_____

(2)

(e) Give the formula of a hydroxide of an element in Period 3 used in medicine.

_____

(1)

(f) Identify the element in Period 3, from sodium to chlorine, that has the largest atomic radius.

_____

(1)

(Total 12 marks)

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