Practice Question Set For A-Level
Subject : Chemistry
Paper-2 Topic: Physical

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Name of the Student:_____
Max. Marks : 27 Marks **Time : 27 Minutes**

Q1.

This question is about Period 3 elements and their compounds.

(a) Which is **not** a correct statement about magnesium hydroxide?

Tick (✓) **one** box.

It is used to neutralise stomach acid	☐
It forms a solution with pH = 14 at 25 °C	☐
It has the empirical formula H_2MgO_2	☐

(1)

(b) Give an equation for the reaction of aluminium oxide with sulfuric acid.

_____

(1)

(c) Identify a reagent or test that could be used to distinguish between aqueous solutions of sulfur dioxide and sulfur trioxide with the same concentrations.

State the observation in each case.

Reagent or test _____

Observation with sulfur dioxide solution _____

_____

Observation with sulfur trioxide solution _____

_____

(3)

(d) The mass spectrum of the element phosphorus has a peak at $\frac{m}{z} = 124$

Give the formula of the species responsible for this peak.

_____

(2)

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(e) Give an equation for the reaction of phosphorus(V) oxide with sodium hydroxide solution.

_____

(1)

(f) Draw the displayed formula of the molecule formed when phosphorus(V) oxide reacts with water.

(1)

(g) The table below shows the melting points of three substances.

Substance	Melting point / K
sodium chloride	1074
chlorine	172
hydrogen chloride	158

Explain why the melting points of these substances are different.

You should refer to the structure of and bonding in each substance.

_____

_____

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(6)
(Total 15 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

_____

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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