Practice Question Set For A-Level
Subject : Chemistry
Paper-1 Topic: Inorganic 2

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

Q1.

The data in the table below show the melting points of oxides of some Period 3 elements.

	Na_2O	P_4O_{10}	SO_2
T_m/K	1548	573	200

(a) In terms of structure and bonding, explain why

(i) sodium oxide has a high melting point

_____

_____

_____

(2)

(ii) sulfur dioxide has a low melting point.

_____

_____

_____

_____

_____

(2)

(b) Explain why the melting point of P_4O_{10} is higher than the melting point of SO_2

_____

_____

_____

_____

(2)

(c) Write equations for the reactions of Na_2O and P_4O_{10} with water. In each case give the approximate pH of the resulting solution.

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Equation for Na_2O _____

pH _____

Equation for P_4O_{10} _____

pH _____

_____

(4)

(d) Write an equation for the acid–base reaction that occurs when Na_2O reacts with P_4O_{10} in the absence of water.

_____

(1)

(Total 11 marks)

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Q2.

This question is about the chemistry of the Period 3 elements and the trends in their properties.

(a) (i) Describe what you would observe when magnesium burns in oxygen. Write an equation for the reaction that occurs. State the type of bonding in the oxide formed.

Observations _____

_____

_____

_____

Equation _____

Type of bonding _____

(4)

(ii) Describe what you would observe when sulfur burns in oxygen. Write an equation for the reaction that occurs. State the type of bonding in the oxide formed.

Observations _____

_____

_____

_____

Equation _____

Type of bonding _____

(4)

(b) State the type of bonding in sodium oxide. Explain why sodium oxide reacts to form an alkaline solution when added to water.

Type of bonding _____

Explanation _____

_____

_____

_____

(3)

(c) Outline an experiment that could be used to show that aluminium oxide contains ions.

_____

_____

_____

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(2)

(d) Suggest one reason why a thin layer of aluminium oxide protects aluminium from corrosion in moist air.

_____

_____

(1)

(e) Write an ionic equation in each case to show how aluminium oxide reacts with the following

(i) hydrochloric acid

_____

(1)

(ii) aqueous sodium hydroxide.

_____

(1)

(Total 16 marks)

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