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

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Name of the Student:_____
Max. Marks : 26 Marks **Time : 26 Minutes**

Q1.

(a) State the trend in the boiling points of the halogens from fluorine to iodine and explain this trend.

Trend _____

Explanation _____

_____

_____

(4)

(b) Each of the following reactions may be used to identify bromide ions. For each reaction, state what you would observe and, where indicated, write an appropriate equation.

(i) The reaction of aqueous bromide ions with chlorine gas

Observation _____

Equation _____

(ii) The reaction of aqueous bromide ions with aqueous silver nitrate followed by the addition of concentrated aqueous ammonia

Observation with aqueous silver nitrate _____

Equation _____

Observation with concentrated aqueous ammonia _____

_____

(iii) The reaction of solid potassium bromide with concentrated sulphuric acid

Observation 1 _____

Observation 2 _____

(7)

(c) Write an equation for the redox reaction that occurs when potassium bromide reacts with concentrated sulphuric acid.

_____

(2)
(Total 13 marks)

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Q2.

Chlorine and bromine are both oxidising agents.

(a) Define an *oxidising agent* in terms of electrons.

_____

(1)

(b) In aqueous solution, bromine oxidises sulphur dioxide, SO_2, to sulphate ions, SO_4^{2-}

(i) Deduce the oxidation state of sulphur in SO_2 and in SO_4^{2-}

SO_2 _____

SO_4^{2-} _____

(ii) Deduce a half-equation for the reduction of bromine in aqueous solution.

_____

(iii) Deduce a half-equation for the oxidation of SO_2 in aqueous solution forming SO_4^{2-} and H^+ ions.

_____

(iv) Use these two half-equations to construct an overall equation for the reaction between aqueous bromine and sulphur dioxide.

_____

(5)

(c) Write an equation for the reaction of chlorine with water. Below each of the chlorine-containing products in your equation, write the oxidation state of chlorine in that product.

_____

_____

(3)

(d) Give a reason why chlorine is not formed when solid potassium chloride reacts with concentrated sulphuric acid.

_____

(1)

(e) Write an equation for the reaction between solid potassium chloride and concentrated sulphuric acid.

_____

(1)

(f) Solid potassium bromide undergoes a redox reaction with concentrated sulphuric acid.

(i) Give the oxidation product formed from potassium bromide.

_____

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(ii) Give the reduction product formed from sulphuric acid.

_____

(2)

(Total 13 marks)

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