

Name of the Student: _____

Max. Marks : 19 Marks

Time : 19 Minutes

Q1.

This question is about some Group 7 compounds.

- (a) Solid sodium chloride reacts with concentrated sulfuric acid.

Give an equation for this reaction.

State the role of the sulfuric acid in this reaction.

Equation

Role _____

(2)

- (b) Fumes of sulfur dioxide are formed when sodium bromide reacts with concentrated sulfuric acid.

For **this** reaction

- give an equation
- give **one** other observation
- state the role of the sulfuric acid.

Equation

Observation _____

Role _____

(3)

- (c) Chlorine reacts with hot aqueous sodium hydroxide as shown in the equation.



Give the oxidation state of chlorine in NaClO_3 and in NaCl

NaClO_3 _____

NaCl _____

(1)

(d) State, in terms of redox, what happens to chlorine in the reaction in part (c).

(1)

(e) Solution **Y** contains **two** different negative ions.

To a sample of solution **Y** in a test tube a student adds

- silver nitrate solution
- then an excess of dilute nitric acid
- finally an excess of concentrated ammonia solution.

The observations after each addition are recorded in the table.

Reagent added to solution Y	Observation
silver nitrate solution	cream precipitate containing compound D and compound E
excess dilute nitric acid	cream precipitate D and bubbles of gas F
excess concentrated ammonia solution	colourless solution containing complex ion G

Give the formulas of **D**, **E** and **F**.

Give an **ionic** equation to show the formation of **E**.

Give an equation to show the conversion of **D** into **G**.

Formula of **D**

Formula of **E**

Formula of **F**

Ionic equation to form **E**

Equation to show the conversion of **D** into **G**

(6)

(Total 13 marks)

Q2.

Separate unlabelled solid samples of three anhydrous sodium compounds are provided for a student to identify.

These compounds are known to be sodium carbonate, sodium fluoride and sodium chloride but it is not known which sample is which.

Outline a logical sequence of test-tube reactions that the student could carry out to identify each of these compounds.

Include the observations the student would expect to make.

Give equations, including **state symbols**, for any reactions that would take place.

(Total 6 marks)