

Tests for Ions & Gases

Question Paper

Level	GCSE
Subject	Chemistry
Exam Board	Edexcel IGCSE
Module	Single Award (Paper 2C)
Topic	Chemistry of the Elements
Sub-Topic	Tests for Ions & Gases
Booklet	Question Paper

Time Allowed: 17 minutes

Score: /14

Percentage: /100

Grade Boundaries:

A*	A	B	C	D	E	U
>85%	75%	70%	60%	55%	50%	<50%

1 A student added some pieces of iron to a boiling tube containing dilute hydrochloric acid. She observed fizzing and the formation of a solution, X.

(a) Identify the gas that causes the fizzing and describe a test for it.

(2)

Gas.....

Test.....

(b) Solution X contains chloride ions.

(i) The student confirmed this by adding some silver nitrate solution. She observed a white precipitate of silver chloride.

Give the formula of the white precipitate, and name the other solution she should have added before the silver nitrate solution.

(2)

Formula of white precipitate

Other solution.....

(ii) Complete the word equation for the reaction in this test.

(1)

iron chloride + silver nitrate → silver chloride +

(c) Solution X also contains ions of iron. The student thought that these ions had the formula Fe^{2+} or Fe^{3+} .

What reagent should she add to decide whether solution X contains Fe^{2+} or Fe^{3+} ions? State the result of the test in each case.

(3)

Reagent.....

Result with Fe^{2+} ions.....

Result with Fe^{3+} ions.....

(Total for Question 1 = 8 marks)

2 Solid X contains two cations (positive ions) and one anion (negative ion).

One of the cations is Fe^{3+}

(a) The table describes the tests carried out on an aqueous solution of X and some of the observations made.

Complete the table by giving the missing observation.

(1)

Test	Observation
add sodium hydroxide solution
then heat the mixture and test the gas given off with damp red litmus paper	litmus paper turns blue
add dilute hydrochloric acid, then add a few drops of barium chloride solution	white precipitate forms

(b) (i) Which cation, other than Fe^{3+} , is present in X?

Explain your answer.

(2)

cation.....

explanation.....
.....

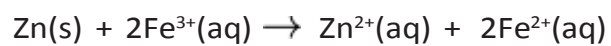
(ii) Identify the anion present in X.

(1)

.....

(c) When zinc is added to a solution containing Fe^{3+} ions, a reaction occurs.

The ionic equation for this reaction is



Identify the reducing agent in this reaction and explain your choice.

(2)

reducing agent.....

explanation.....

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(Total for Question 2 = 6 marks)
