

SCIENCE

INTERACTIVE ASSESSMENT QUESTIONS BASED ON STANDARD PRACTICAL EXERCISES FOR REVISION AND EXAMINATION PRACTICE

Chemistry Part I

LEARNING VERSION

IN THIS LEARNING VERSION ANSWERS ARE IMMEDIATELY AND VISIBLY MARKED, CORRECT ANSWERS ARE INDICATED ON REQUEST, AND END OF SECTION TOTALS AND PERCENTAGES SHOWN ON SCREEN.

SOME OF THE MORE DIFFICULT QUESTIONS HAVE DROP DOWN HELP BOXES WHICH REVEAL INFORMATION WHEN THE CURSOR IS PASSED OVER THE QUESTION MARK.

WHEN PRINTED OUT ONLY THE QUESTIONS SHOW, THEREFORE THIS CAN BE USED AS A PAPER VERSION FOR TESTS IF REQUIRED.

The questions are of the Multiple Choice style, where the phrase “Which ONE of the following ...” is implied, but is not always stated. So that students are reminded of the type of question that requires short written answers, which unfortunately cannot be automatically marked, each topic has one short passage with missing words, which must be identified in their correct sequence.

NB The practical work presented should be familiar to students, either as demonstrations or as procedures they might have carried out themselves in the lab.

The material is NOT presented as a practical guide, and while the methods followed safety guidelines, specific safety issues are NOT dealt with. Visit www.cleapps.org.uk

CONTENTS

The following practical topics have been selected according to exam question frequency to form the basis of revision and examination practice.

FOR THE CORRECT FINAL TOTAL AND PERCENTAGE THE ENTER BUTTON AT THE BOTTOM LEFT OF EACH PAGE MUST BE CLICKED ON.

Part 1

Reactivity series

Displacement

Alkali metals

Part 2

Neutralisation

Rate of reaction

Electrolysis

Part 3

Hydrocarbons and fractional distillation

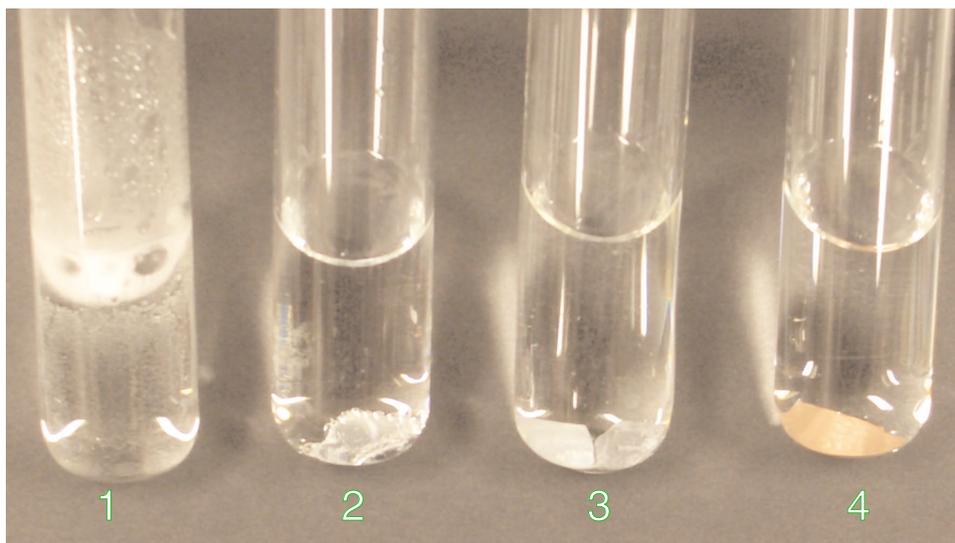
Cracking hydrocarbons

Bromine water test

● **Reactivity Series**

Metals can be placed in order according to their reactivity. This order is known as the **reactivity series**.

Practical - The photograph show various metals placed in hydrochloric acid.



1. Which one of the following is the best description of how to determine the reactivity of a metal in the experiment above?

- A - Colour of metal.
- B - Amount of effervescence (fizzing).
- C - Size of piece of metal.
- D - Amount of carbon dioxide produced

2. Which one of the boiling tubes holds the most reactive metal?

- A - Boiling tube number 1
- B - Boiling tube number 2
- C - Boiling tube number 3
- D - Boiling tube number 4

3. Which one of the boiling tubes holds the second most reactive metal?

- A - Boiling tube number 3
- B - Boiling tube number 1
- C - Boiling tube number 4
- D - Boiling tube number 2

● **Reactivity Series**

The following reactivity series will help in answering the question.

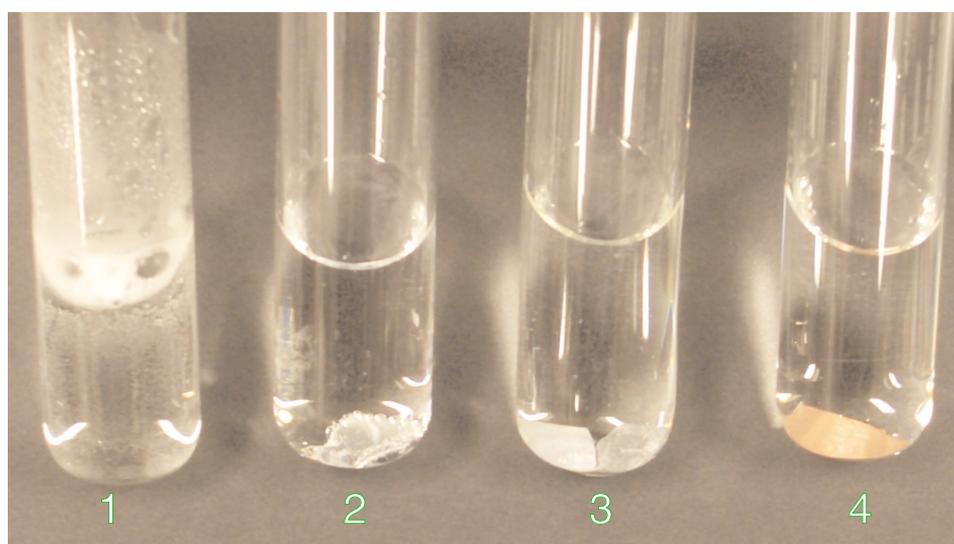
MOST REACTIVE

↑ Magnesium
 ↑ Zinc
 ↑ Iron
 ↓ Copper

Least reactive

HELP BOX

PASS CURSOR OVER QUESTION MARK FOR HELP WITH QUESTION 5



4. The effervescence (fizzing) is caused as a result of the reaction between the metal and the hydrochloric acid producing a gas. Which one of the following correctly identifies the gas.

- A** - Carbon dioxide
- B** - Nitrogen
- C** - Helium
- D** - Hydrogen

5. Which one of the following shows the correct match of metals to boiling tubes as shown in the photograph?

- A** - 1 = Copper, 2 = Zinc, 3 = Iron, 4 = Magnesium
- B** - 1 = Zinc, 2 = Iron, 3 = Copper, 4 = Magnesium
- C** - 1 = Magnesium, 2 = Zinc, 3 = Iron, 4 = Copper
- D** - 1 = Iron, 2 = Zinc, 3 = Magnesium, 4 = Copper

● Reactivity Series

6. The following passage has four missing words.

When a reactive __ is placed in __ acid a gas is produced. The reactivity of the metal can be determined by the number of bubbles of gas that are produced when it is placed in an acid. The higher the reactivity the __ the number of bubbles. Metals can be placed in order of their reactivity. This list is known as the Reactivity __.

Which of the following has the correct missing words in the sequence as they should appear in the passage.

- A** - metal - hydrochloric - lesser - series
- B** - alkali - sulphuric - greater - group
- C** - metal - nitric - lesser - sequence
- D** - metal - hydrochloric - greater - series



Displacement

More reactive elements displace less reactive ones from solution.

Practical - Various metals were placed in metal solutions in wells on a white tile. From left to right the order of the metal solutions in the wells was: Magnesium sulphate, Zinc sulphate, Iron sulphate, and Copper sulphate.

HELP BOX

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QUESTION MARK
FOR HELP WITH
QUESTIONS
7 & 8



The following reactivity series will help in answering the questions.

MOST REACTIVE

↑ Magnesium
Zinc
Iron
Copper

Least reactive.



7. Which one of the following best describes the reactivity of magnesium compared to the other metals in the experiment.

- A** - Magnesium is more reactive than the other metals in solution, and so will displace the less reactive metals.
- B** - Magnesium is less reactive than the other metals in solution, and so will displace the less reactive metals.
- C** - Magnesium is less reactive than the other metals in solution, and so will displace the more reactive metals.
- D** - Magnesium is as equally reactive as the other metals in solution, and so will displace the other metals.

8. In the experiment shown above which one of the following alternatives have displaced iron from the iron sulphate solutions?

- A** - Copper and Magnesium
- B** - Magnesium, Zinc and Copper
- C** - Zinc and Copper
- D** - Magnesium and Zinc

● Displacement

HELP BOX

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QUESTION MARK
FOR HELP WITH
QUESTIONS
9, 10 & 11

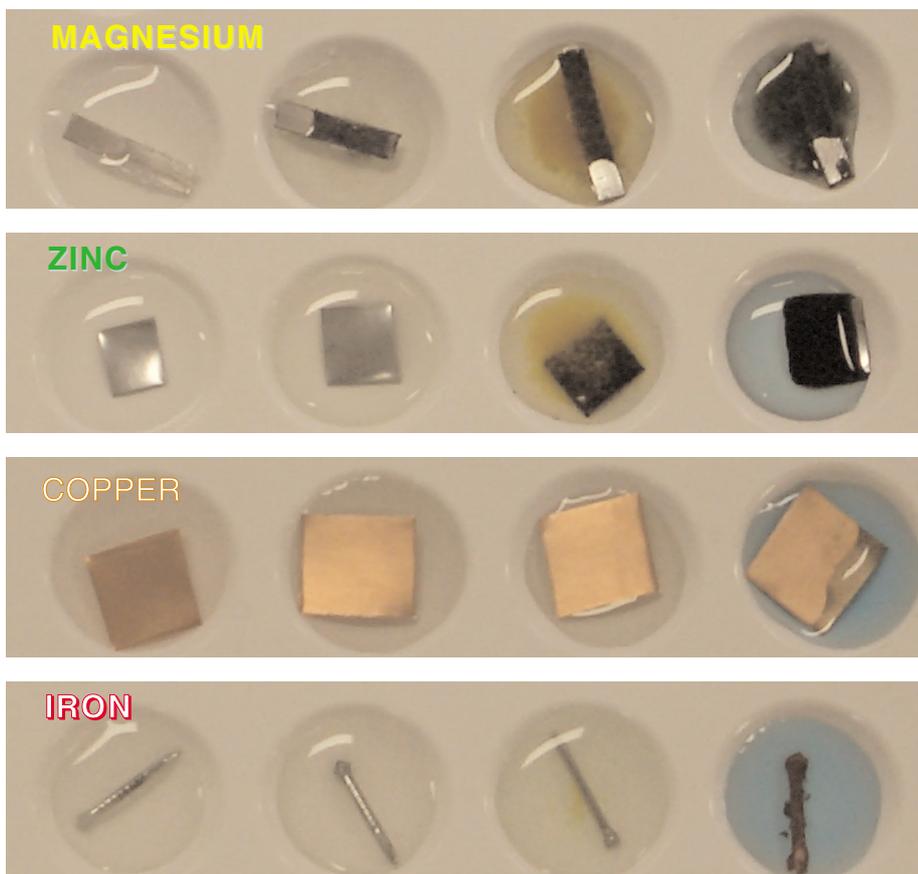


The following reactivity series will help in answering the questions.

MOST REACTIVE

↑ Magnesium
Zinc
Iron
Copper

Least reactive.



9. In the experiment shown above which one of the following alternatives has displaced copper from the copper sulphate solutions?

- A - Magnesium, Zinc and Iron
- B - Zinc only
- C - Magnesium only
- D - Magnesium and Zinc

10. Which one of the following best explains why magnesium has not been displaced from the magnesium sulphate solutions?

- A - Magnesium is not reactive.
- B - Magnesium is less reactive than the other metals.
- C - Magnesium is as equally reactive as the other metals.
- D - Magnesium is more reactive than the other metals.

11. Which one of the following metals will displace zinc from the zinc sulphate solutions?

- A - Iron
- B - Copper
- C - Magnesium
- D - Silver

● Displacement

HELP BOX

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QUESTION
NUMBER **12**

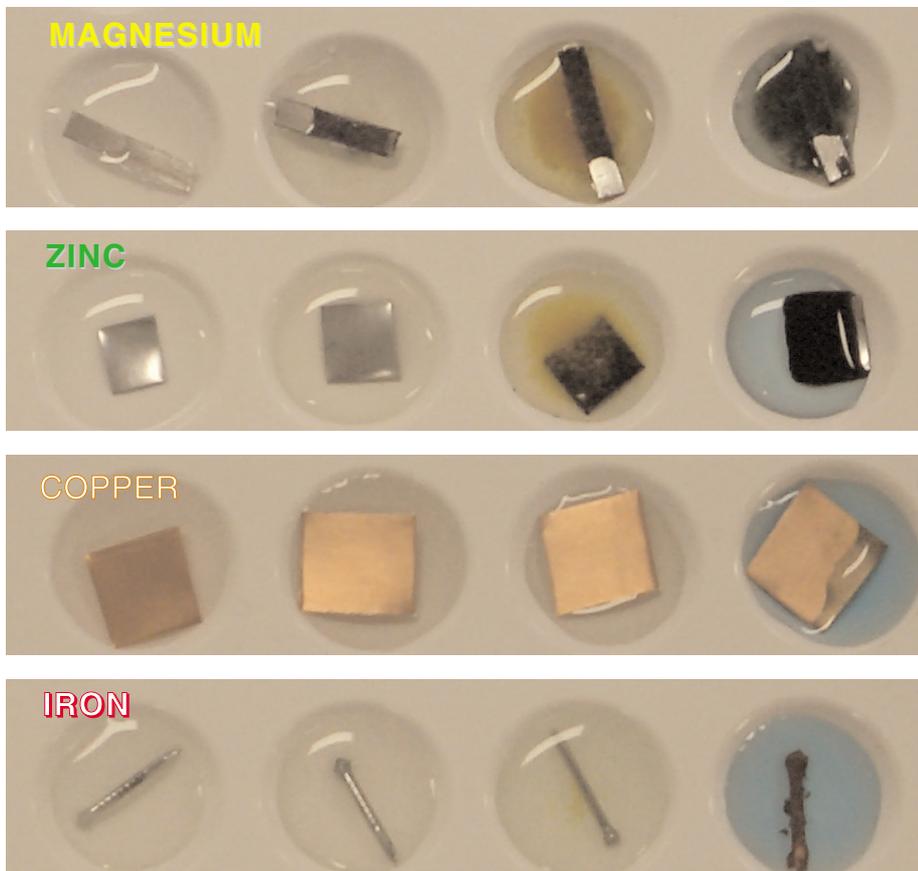


The following reactivity series will help in answering the questions.

MOST REACTIVE

↑
Magnesium
Zinc
Iron
Copper

Least reactive.



12. The following passage has words missing.

When metals are in solution a __ reactive metal will displace a __ reactive metal from its solution. Zinc is __ reactive than copper and therefore if zinc is placed in copper sulphate solution the zinc will displace the copper. The solution will then be one of __ sulphate

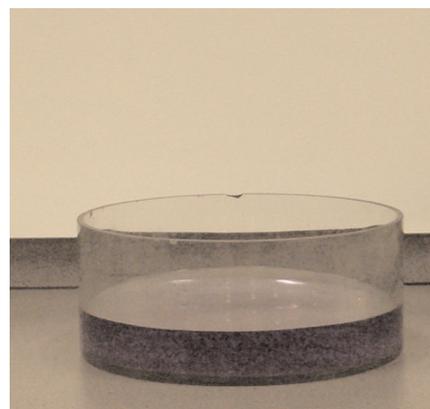
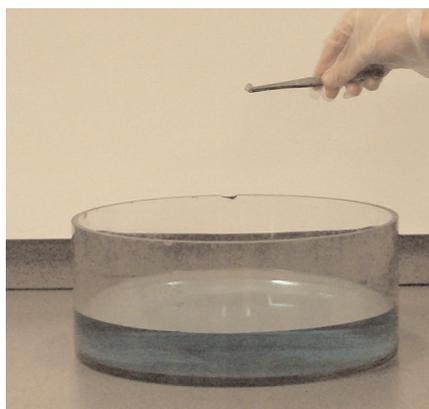
Which one of the following has the missing words in the correct sequence as they should appear in the passage.

- A** - less - more - more - copper
B - more - less - **more** - zinc
C - less - more - less - copper
D - more - less - **less** - zinc



● Alkali Metals

Practical - The photos show a reaction between an alkali metal and water. Universal Indicator has been added to the water. Photo A was taken just before the metal was added to the water in the glass trough, and Photograph B was taken after the metal had been added to the water and the reaction had occurred.



HELP BOX

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FOR HELP WITH
QUESTION 14



The gas produced will make a popping sound when it comes into contact with a flame.

13. Why does the universal indicator turn purple when the alkali metal reacts with the water? Choose one answer from the following:

- A** - The reaction has resulted in the solution becoming neutral.
- B** - The reaction has resulted in the solution becoming acidic.
- C** - The reaction has resulted in the solution becoming alkaline.
- D** - The reaction has increased the temperature of the solution.

14. When an alkali metal reacts with water a gas is given off. Which one of the following correctly identifies the gas given off?

- A** - Oxygen
- B** - Hydrogen
- C** - Helium
- D** - Carbon dioxide

● Alkali Metals

HELP BOX

PASS CURSOR OVER
QUESTION MARK
FOR HELP WITH
QUESTIONS
15 & 16



Alkali metals become more reactive as you move down Group 1.

15. Which one of the following best describes the reaction between an alkali metal at the top of Group 1 and water?

- A** - Effervescence (fizzing), movement of the metal on the surface of the water.
- B** - Sinking of the metal, production of a salt.
- C** - Metal floats, production of carbon dioxide.
- D** - Metal floats, production of oxygen.

16. Which one of the following best describes the reaction between an alkali metal at the bottom of Group 1 and water:

- A** - Metal floats, oxygen produced.
- B** - Slight effervescence (fizzing), metal sinks.
- C** - Metal catches fire, carbon dioxide produced.
- D** - Violent explosion, sparks visible.

17. Which one of the alternatives shown below is the other reactant in the following equation?

..... + Water = Sodium hydroxide + Hydrogen

- A** - Sodium
- B** - Potassium
- C** - Zinc
- D** - Magnesium

● Alkali Metals

18. Which one of the following is the other product of the reaction shown in the equation below?

Lithium + Water = + Hydrogen

- A - Lithium chloride
- B - Lithium hydroxide
- C - Potassium chloride
- D - Sodium hydroxide

19. The following passage has four missing words.

The alkali metals are in group 1 of the periodic table. The metal at the __ of the group is Lithium and the metal at the __ of the group is Francium. As you go down the group the reactivity of the metals increases. The metal at the __ of the group is therefore less reactive than the metal at the __ of the group.

Which one of the following has the missing words in the correct sequence as they should appear in the passage.

- A** - bottom - top - top - bottom
- B** - top - bottom - bottom - top
- C** - top - bottom - top - bottom
- D** - bottom - top - bottom - top

- Displacement
- Alkali Metals
- Reactivity Series

SECTION TOTAL

SECTION PERCENTAGE