Revision Sheet

IGCSE Chemistry · Unit 9 Metals

10 vocabulary items · 27 marks of exam questions (9 questions)

Part 1 · Vocabulary review (10 items). The terms this unit is examined on most. Mark it yourself from the answer key.

Section A · Chinese to English

Write the English word.

1. _____ [1]

2. _____ [1]

3. _____ [1]

4. _____ [1]

5. _____ [1]

6. _____ [1]

7. _____ [1]

8. _____ [1]

9. _____ [1]

10. _____ [1]

Part 2 · Exam questions (27 marks, 9 questions) begins on the next page. They are ordered easy to difficult and none of them has been set before.

11 Four metals, Q, R, S and T, are each added to separate samples of water, steam and dilute hydrochloric acid.

The results are shown.

	observation with water	observation with steam	observation with dilute hydrochloric acid
Q	slow reaction	fast reaction	fast reaction
R	no reaction	no reaction	no reaction
S	no reaction	very slow reaction	slow reaction
T	fast reaction	explodes	explodes

Which statements are correct?

1 R is the least reactive metal.

2 T could be potassium.

3 S is more reactive than Q and R.

4 Metals generally react faster with steam than they react with water.

A 1, 2 and 4 **B** 1 and 2 only **C** 2 and 3 **D** 3 and 4

12 Metal X acts as a sacrificial metal to prevent iron from corroding.

Metal X does **not** act as a sacrificial metal to prevent aluminium from corroding.

What is X?

A copper

B magnesium

C silver

D zinc

13 Which equation represents the reduction of a compound found in hematite in the blast furnace?

A $2Al_2O_3 \rightarrow 4Al + 3O_2$

B $CaO + SiO_2 \rightarrow CaSiO_3$

C $2FeO + CO \rightarrow Fe_2O_3 + C$

D $Fe_2O_3 + 3CO \rightarrow 2Fe + 3CO_2$

14 Which row identifies the properties of zinc?

	thermal conductivity	reacts with dilute acid
A	good	yes
B	good	no
C	poor	yes
D	poor	no

15 P, Q, R and S are metals.

P reacts with dilute hydrochloric acid, forming hydrogen.

Q reacts violently with water.

R reacts with water to give hydrogen.

S is formed by heating its oxide with carbon.

Which row identifies the metals?

	P	Q	R	S
A	copper	sodium	potassium	iron
B	zinc	magnesium	calcium	iron
C	zinc	sodium	calcium	magnesium
D	iron	potassium	sodium	zinc

16 Which compound is formed when iron rusts?

A anhydrous iron(II) oxide

B anhydrous iron(III) oxide

C hydrated iron(III) hydroxide

D hydrated iron(III) oxide

17 Why is cryolite used in the extraction of aluminium by electrolysis?

A It dissolves the aluminium oxide.

B It protects the anodes from corrosion.

C It changes bauxite to aluminium oxide.

D It decreases the melting point of the aluminium.

1 A list of oxides, **A** to **H**, is shown.

A calcium oxide

B aluminium oxide

C silicon(IV) oxide

D sulfur dioxide

E carbon dioxide

F iron(III) oxide

G silver oxide

H carbon monoxide

Answer the following questions about the oxides, **A** to **H**.
Each letter may be used once, more than once or not at all.

State which of the oxides, **A** to **H**:

(a) is responsible for acid rain

..... [1]

(b) has a giant covalent structure

..... [1]

(c) is a reducing agent in the blast furnace

..... [1]

(d) is the main constituent of bauxite

..... [1]

(e) is the main impurity in iron ore

..... [1]

(f) can be reduced by heating with copper.

..... [1]

[Total: 6]

19 A list of five metals is shown.

copper
iron
magnesium
potassium
silver

(a) All metals form positive ions.

(i) Describe how atoms form positive ions.

..... [1]

(ii) State which of the five metals in the list has the greatest tendency to form positive ions.

..... [1]

(iii) Suggest **one** of the five metals in the list which is **not** likely to show catalytic properties.

..... [1]

(iv) State which of the five metals in the list is a major component of stainless steel.

..... [1]

(b) A student adds a sample of a metal to an aqueous metal salt in a beaker to see if a displacement reaction takes place.

Complete Table 2.1 to show the colour of the solution in the beaker at the start and at the end of the experiment.

Table 2.1

metal	aqueous solution	colour at the start	colour at the end
magnesium	iron(II) sulfate	green	
silver	copper(II) sulfate		

[3]

(c) Most Group II metals form a gas when placed into cold water. An alkaline solution is also formed.

(i) Name the gas formed when strontium is added to cold water.

..... [1]

(ii) Name the alkaline solution formed when strontium is added to cold water.

..... [1]

(iii) One Group II metal reacts very slowly when placed in cold water. When heated, the metal reacts with steam to form a white solid.

Identify this metal and name the white solid formed.

metal .....

white solid .....
[2]

(d) Under certain conditions, iron will react with steam to form an oxide of iron with the formula Fe_3O_4.

Fe_3O_4 reacts with dilute hydrochloric acid to form a mixture of iron(II) and iron(III) salts and water.

Deduce the symbol equation for the reaction between Fe_3O_4 and dilute hydrochloric acid.

..... [3]

[Total: 14]