

Redox

Question Paper 2

Level	IGCSE
Subject	Chemistry (0620/0971)
Exam Board	Cambridge International Examinations (CIE)
Topic	Chemical Reactions
Sub-Topic	Redox
Booklet	Question Paper 2

Time Allowed: 20 minutes

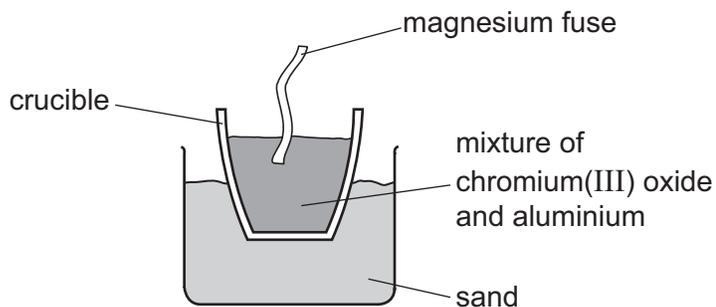
Score: /16

Percentage: /100

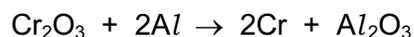
Grade Boundaries:

9	8	7	6	5	4	3	2	1
>85%	75%	68%	60%	53%	48%	40%	33%	<25%

- 1.. A violent reaction occurs when a mixture of chromium(III) oxide and aluminium is ignited with a magnesium fuse as shown.



The equation for the reaction is shown.



Which substance is oxidised in the reaction?

- A aluminium
 - B aluminium oxide
 - C chromium
 - D chromium(III) oxide
- 2.. Which equation represents a reduction reaction?

- A $\text{Fe}^{2+} + \text{e}^- \rightarrow \text{Fe}^{3+}$
- B $\text{Fe}^{2+} \rightarrow \text{Fe}^{3+} + \text{e}^-$
- C $\text{Fe}^{3+} + \text{e}^- \rightarrow \text{Fe}^{2+}$
- D $\text{Fe}^{3+} \rightarrow \text{Fe}^{2+} + \text{e}^-$

3. Iron is extracted from iron oxide using carbon monoxide as shown.

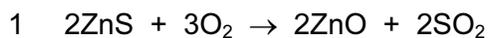


Which statement is correct?

- A Carbon monoxide is oxidised to carbon dioxide.
 - B Carbon monoxide is reduced to carbon dioxide.
 - C Iron is oxidised to iron oxide.
 - D Iron oxide is oxidised to iron.
4. Zinc is extracted from zinc blende by roasting it in air to form zinc oxide.

The zinc oxide is then heated with carbon to form zinc.

The equations for the reactions are shown.



Which statement about reactions 1 and 2 is **not** correct?

- A In reaction 1 the oxidation state of sulfur increases and it is oxidised.
- B In reaction 1 the oxidation state of zinc increases and it is oxidised.
- C In reaction 2 the carbon acts as a reducing agent and it is oxidised.
- D In reaction 2 the oxidation state of zinc decreases and it is reduced.

5 Which of these reactions shows only reduction?

- A $\text{Cu}^{2+} + 2\text{e}^{-} \rightarrow \text{Cu}$
- B $\text{Fe}_2\text{O}_3 + 3\text{CO} \rightarrow 2\text{Fe} + 3\text{CO}_2$
- C $\text{HCl} + \text{NaOH} \rightarrow \text{NaCl} + \text{H}_2\text{O}$
- D $\text{Mg} + \text{ZnSO}_4 \rightarrow \text{Zn} + \text{MgSO}_4$

6. The red colour in some pottery glazes may be formed as a result of the reactions shown.

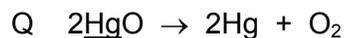


These equations show that1..... is oxidised and2..... is reduced.

Which substances correctly complete gaps 1 and 2 in the above sentence?

	1	2
A	CO_2	SnO_2
B	CuCO_3	CuO
C	CuO	SnO
D	SnO	CuO

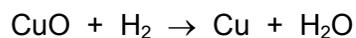
7. The equations for two reactions P and Q are given.



In which of these reactions does oxidation of the underlined substance occur?

	P	Q
A	✓	✓
B	✓	x
C	x	✓
D	x	x

8. Copper(II) oxide reacts with hydrogen.



Which row is correct?

	oxidising agent	reducing agent
A	H ₂	CuO
B	CuO	H ₂
C	H ₂ O	Cu
D	Cu	H ₂ O

9. Copper metal donates electrons to silver ions.

Zinc metal donates electrons to copper ions.

What is the strongest reducing agent?

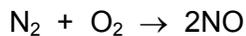
- A** copper ions
- B** copper metal
- C** silver ions
- D** zinc metal

10. Silver chloride reacts when it is exposed to light.

Which row shows what happens to the silver in this process?

	half-equation	type of reaction
A	$\text{Ag} \rightarrow \text{Ag}^+ + \text{e}^-$	oxidation
B	$\text{Ag} \rightarrow \text{Ag}^+ + \text{e}^-$	reduction
C	$\text{Ag}^+ + \text{e}^- \rightarrow \text{Ag}$	oxidation
D	$\text{Ag}^+ + \text{e}^- \rightarrow \text{Ag}$	reduction

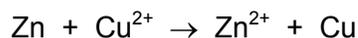
11. The reactions shown may occur in the air during a thunder-storm.



Which row shows what happens to the reactant molecules in each of these reactions?

	N ₂	NO	O ₃
A	oxidised	oxidised	oxidised
B	oxidised	oxidised	reduced
C	reduced	reduced	oxidised
D	reduced	reduced	reduced

12. An example of a redox reaction is shown.



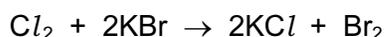
Which statement about the reaction is correct?

- A Zn is the oxidising agent and it oxidises Cu²⁺.
- B Zn is the oxidising agent and it reduces Cu²⁺.
- C Zn is the reducing agent and it oxidises Cu²⁺.
- D Zn is the reducing agent and it reduces Cu²⁺.

13. In which reaction is the first substance in the equation oxidised?

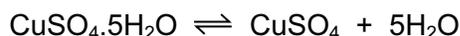
- A $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca(OH)}_2$
- B $4\text{FeO} + \text{O}_2 \rightarrow 2\text{Fe}_2\text{O}_3$
- C $\text{SnO}_2 + 2\text{H}_2 \rightarrow \text{Sn} + 2\text{H}_2\text{O}$
- D $\text{ZnCO}_3 \rightarrow \text{ZnO} + \text{CO}_2$

14. Chlorine displaces bromine from a solution of potassium bromide.



What is the oxidising agent in this reaction?

- A bromide ions
 - B bromine
 - C chloride ions
 - D chlorine
- 15 The equation shows the formation of anhydrous copper(II) sulfate from hydrated copper(II) sulfate.



Statements 1, 2 and 3 refer to this reaction.

- 1 Hydrated copper(II) sulfate is reduced to anhydrous copper(II) sulfate.
- 2 The (II) in the name copper(II) sulfate refers to the oxidation state of the metal.
- 3 The reaction is reversible.

Which statements are correct?

- A 1 only
 - B 1 and 2
 - C 2 and 3
 - D 3 only
- 16 Which equation from the zinc extraction process shows the metal being produced by reduction?
- A $\text{ZnO} + \text{C} \rightarrow \text{Zn} + \text{CO}$
 - B $2\text{ZnS} + 3\text{O}_2 \rightarrow 2\text{ZnO} + 2\text{SO}_2$
 - C $\text{Zn(g)} \rightarrow \text{Zn(l)}$
 - D $\text{Zn(l)} \rightarrow \text{Zn(s)}$