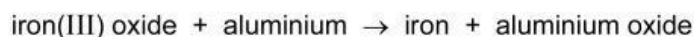


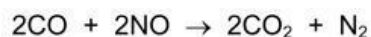
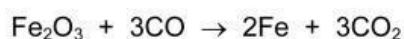
- 1 Aluminium reacts with iron(III) oxide as shown.



Which statement about this reaction is correct?

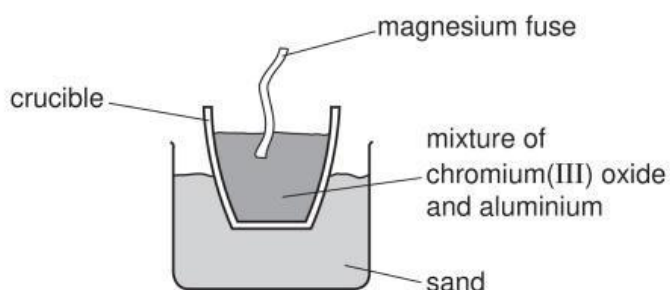
- A Aluminium is oxidised.
- B Aluminium oxide is reduced.
- C Iron(III) oxide is oxidised.
- D Iron is oxidised.

- 2 The equations below all show redox reactions.

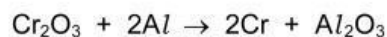


Which oxide is oxidised in these reactions?

- A  $\text{Fe}_2\text{O}_3$
  - B CO
  - C ZnO
  - D NO
- 3 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?

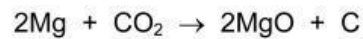
- A aluminium
- B aluminium oxide
- C chromium
- D chromium(III) oxide

4 The element vanadium, V, forms several oxides.

In which change is oxidation taking place?

- A  $\text{VO}_2 \rightarrow \text{V}_2\text{O}_3$
- B  $\text{V}_2\text{O}_5 \rightarrow \text{VO}_2$
- C  $\text{V}_2\text{O}_3 \rightarrow \text{VO}$
- D  $\text{V}_2\text{O}_3 \rightarrow \text{V}_2\text{O}_5$

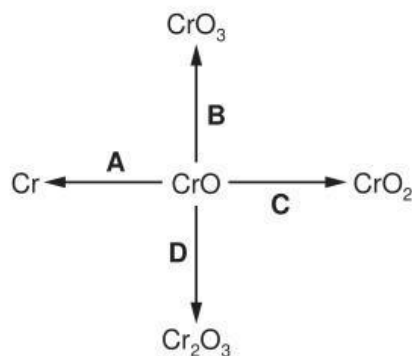
5 The reaction between magnesium and carbon dioxide is represented by the following equation.



Which statement describes what happens in this reaction?

- A Carbon is oxidised.
- B Magnesium is reduced.
- C Neither oxidation nor reduction happens.
- D The carbon in carbon dioxide is reduced.

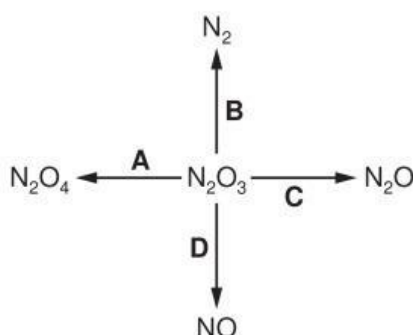
6 In which change is chromium(II) oxide, CrO, reduced?



7 In which equation does the oxidation of the underlined compound occur?

- A  $2\text{CuO} + \text{C} \rightarrow \text{CO}_2 + \underline{\text{Cu}}$
- B  $\text{Fe}_2\text{O}_3 + \underline{3\text{CO}} \rightarrow 2\text{Fe} + 3\text{CO}_2$
- C  $2\text{Mg} + \text{O}_2 \rightarrow \underline{2\text{MgO}}$
- D  $\underline{\text{MnO}_2} + 4\text{HCl} \rightarrow \text{MnCl}_2 + 2\text{H}_2\text{O} + \text{Cl}_2$

8 In which change is  $\text{N}_2\text{O}_3$  oxidised?

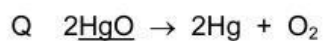
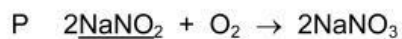


9 When copper is heated in air a black coating forms on the copper.

What happens to the copper in this reaction?

- A The copper catches fire.
- B The copper decomposes.
- C The copper gains oxygen.
- D The copper loses oxygen.

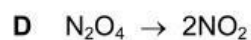
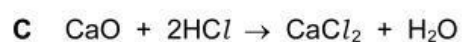
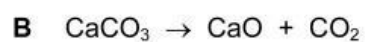
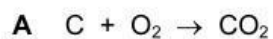
10 The equations for two reactions P and Q are given.



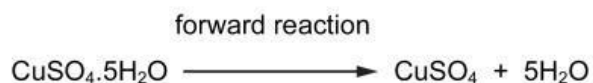
In which of these reactions does oxidation of the underlined substance occur?

	P	Q
A	✓	✓
B	✓	x
C	x	✓
D	x	x

11 Which equation shows an oxidation reaction?



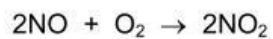
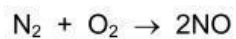
12 The equation shows a reaction that is reversed by changing the conditions.



How can the forward reaction be reversed?

	by adding water	by heating
A	✓	✓
B	✓	x
C	x	✓
D	x	x

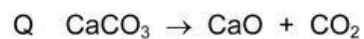
13 The reactions shown may occur in the air during a thunder storm.



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

	$\text{N}_2$	$\text{NO}$	$\text{O}_3$
A	oxidised	oxidised	oxidised
B	oxidised	oxidised	reduced
C	reduced	reduced	oxidised
D	reduced	reduced	reduced

14 Equations P and Q represent two reactions which occur inside a blast furnace.

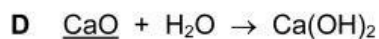
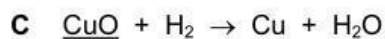
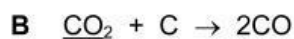
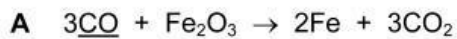


Which type of reactions are P and Q?

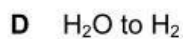
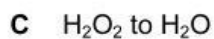
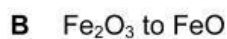
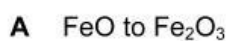
	P	Q
A	redox	redox
B	redox	thermal decomposition
C	thermal decomposition	redox
D	thermal decomposition	thermal decomposition

15 The equations represent redox reactions.

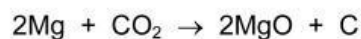
In which equation is the underlined substance acting as a reducing agent?



16 Which change is an oxidation?



17 Which statement describes what happens in the reaction shown?



**A** Carbon and magnesium are both oxidised.

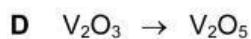
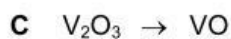
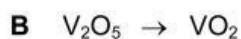
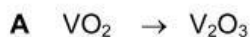
**B** Carbon is oxidised and magnesium oxide is reduced.

**C** Magnesium is oxidised and carbon dioxide is reduced.

**D** Magnesium oxide and carbon dioxide are both reduced.

18 The element vanadium, V, forms several oxides.

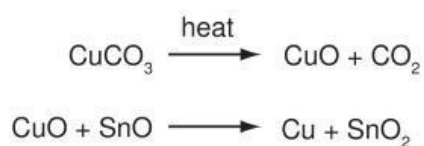
In which change is oxidation taking place?



19 In which reaction is lead(II) oxide, PbO, oxidised?

- A  $\text{PbO} + \text{C} \rightarrow \text{Pb} + \text{CO}$
- B  $\text{PbO} + \text{CO} \rightarrow \text{Pb} + \text{CO}_2$
- C  $\text{PbO} + \text{H}_2 \rightarrow \text{Pb} + \text{H}_2\text{O}$
- D  $2\text{PbO} + \text{O}_2 \rightarrow 2\text{PbO}_2$

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

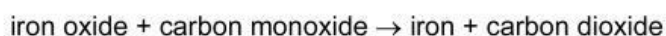


These equations show that .....1..... is oxidised and .....2..... is reduced.

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

	1	2
<b>A</b>	$\text{CO}_2$	$\text{SnO}_2$
<b>B</b>	$\text{CuCO}_3$	$\text{CuO}$
<b>C</b>	$\text{CuO}$	$\text{SnO}$
<b>D</b>	$\text{SnO}$	$\text{CuO}$

21 Iron is extracted from iron oxide using carbon monoxide as shown in the equation.



What does the equation show?

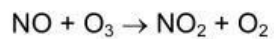
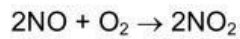
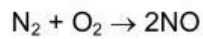
- A Carbon monoxide is oxidised to carbon dioxide.
- B Carbon monoxide is reduced to carbon dioxide.
- C Iron is oxidised to iron oxide.
- D Iron oxide is oxidised to iron.

22 The equations represent redox reactions.

In which equation is the underlined substance acting as a reducing agent?

- A CaO + H<sub>2</sub>O → Ca(OH)<sub>2</sub>
- B CO<sub>2</sub> + C → 2CO
- C CuO + H<sub>2</sub> → Cu + H<sub>2</sub>O
- D 3CO + Fe<sub>2</sub>O<sub>3</sub> → 2Fe + 3CO<sub>2</sub>

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



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

	N <sub>2</sub>	NO	O <sub>3</sub>
<b>A</b>	oxidised	oxidised	oxidised
<b>B</b>	oxidised	oxidised	reduced
<b>C</b>	reduced	reduced	oxidised
<b>D</b>	reduced	reduced	reduced