

O Level Combined Chemistry MCQs

Redox Test 1.0

Q1

A colourless gas is passed into two different solutions. The results are shown in the table.

solution	potassium iodide	acidified potassium manganate (VII)
result	colourless	purple to colourless

What is the colourless gas?

- A an acid
- B an alkali
- C an oxidising agent
- D a reducing agent

Q2

Which of the following is an example of a redox reaction?

- A $2\text{SO}_2 + \text{O}_2 \rightarrow 2\text{SO}_3$
- B $\text{Ba}^{2+} + \text{SO}_4^{2-} \rightarrow \text{BaSO}_4$
- C $\text{CuO} + \text{H}_2\text{SO}_4 \rightarrow \text{CuSO}_4 + \text{H}_2\text{O}$
- D $\text{H}^+ + \text{OH}^- \rightarrow \text{H}_2\text{O}$

Q3

Chromium forms the compound chromium(III) sulfate.
What does the (III) represent?

- A the charge on a sulfate ion
- B the number of chromium ions combined with one sulfate ion
- C the number of sulfate ions combined with one chromium ion
- D the oxidation state of chromium

Q4

Substance Q turns a solution of aqueous potassium iodide from colourless to brown.

What must substance Q be?

- A a reducing agent
- B an acid
- C an alkali
- D an oxidising agent

Q5

Which reaction is not a redox reaction?

- A combustion of hydrogen
- B ethanol turning into ethanoic acid after being exposed to air
- C neutralisation of aqueous sodium hydroxide and dilute hydrochloric acid
- D rusting of iron nails

Q6

Substance Y produces iodine from aqueous potassium iodide and changes acidified potassium manganate(VII) from purple to colourless.

Which row is correct?

	Y	potassium iodide	acidified potassium manganate(VII)
A	is an oxidising agent only	is oxidised	is oxidised
B	is a reducing agent only	is reduced	is reduced
C	is both an oxidising agent and a reducing agent	is oxidised	is reduced
D	is both an oxidising agent and a reducing agent	is reduced	is oxidised

Q7

Small portions of aqueous potassium iodide and acidified aqueous potassium manganate(VII) were added to four solutions. The colour changes were as shown in the table.

Which solution contained only a reducing agent?

	potassium iodide	potassium manganate(VII)
A	no visible reaction	purple to colourless
B	colourless to brown	purple to colourless
C	no visible reaction	no visible reaction
D	colourless to brown	no visible reaction

Q8

The equations show some reactions involving zinc and its compounds.

- 1 zinc + oxygen → zinc oxide
- 2 zinc carbonate → zinc oxide + carbon dioxide
- 3 zinc oxide + carbon → zinc + carbon monoxide

In which reaction(s) has the underlined substance been reduced?

- | | | | |
|---|---------|---|---------|
| A | 1 | C | 2 and 3 |
| B | 1 and 2 | D | 3 |

Q9

Substance **B** produces iodine from aqueous potassium iodide and changes acidified aqueous potassium manganate (VII) from purple to colourless. How is the behaviour of **B** described?

- A It is an oxidizing agent.
- B It is a reducing agent.
- C It is both an oxidizing agent and a reducing agent.
- D It is neither an oxidizing agent nor a reducing agent.

Q10

The following shows pairs of compounds with elements underlined. In which pair of compounds does the underlined element have the same oxidation states?

- A Fe₂O₃ and FeSO₄
- B H₂S and SO₂
- C NaCl and CuCl₂
- D MnO₂ and MnCl₂

Answers

Redox Test 1.0

Q1 D

Q2 A

Q3 D

Q4 D

Q5 C

Q6 C

Q7 A

Q8 D

Q9 C

Q10 C

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