

O Level Pure Chemistry MCQs

Redox Test 1.0

Q1

In which reaction is sulfur dioxide acting as an oxidizing agent?

- A $\text{SO}_2 + 2 \text{H}_2\text{O} + \text{Cl}_2 \rightarrow \text{H}_2\text{SO}_4 + 2 \text{HCl}$
- B $\text{SO}_2 + 2 \text{NaOH} \rightarrow \text{Na}_2\text{SO}_3 + 2 \text{H}_2\text{O}$
- C $2 \text{SO}_2 + \text{O}_2 \rightarrow 2 \text{SO}_3$
- D $\text{SO}_2 + \text{H}_2\text{S} \rightarrow 2 \text{H}_2\text{O} + 3 \text{S}$

Q2

An unknown substance **Z** is added to aqueous potassium iodide, and there was no visible change observed.

Which statement describing **Z** is definitely true?

- A **Z** is a reducing agent.
- B **Z** is an oxidizing agent.
- C **Z** is not a reducing agent.
- D **Z** is not an oxidizing agent.

Q3

Which of the equation does **not** represent a redox reaction?

- A $3\text{Cl}_2(\text{g}) + 2\text{Fe}(\text{s}) \rightarrow 2\text{FeCl}_3(\text{s})$
- B $\text{Ba}^{2+}(\text{aq}) + \text{SO}_4^{2-}(\text{aq}) \rightarrow \text{BaSO}_4(\text{s})$
- C $\text{Fe}^{2+}(\text{aq}) + \text{Mg}(\text{s}) \rightarrow \text{Fe}(\text{s}) + \text{Mg}^{2+}(\text{aq})$
- D $\text{Zn}(\text{s}) + 2\text{HCl}(\text{aq}) \rightarrow \text{ZnCl}_2(\text{aq}) + \text{H}_2(\text{g})$

Q4

In which reaction does chromium undergo a change in oxidation number?

- A** $\text{Cr}_2\text{O}_3 + 3\text{H}_2\text{SO}_4 \rightarrow \text{Cr}_2(\text{SO}_4)_3 + 3\text{H}_2\text{O}$
B $\text{Cr}_2(\text{SO}_4)_3 + 6\text{NaOH} \rightarrow 2\text{Cr}(\text{OH})_3 + 3\text{Na}_2\text{SO}_4$
C $\text{K}_2\text{Cr}_2\text{O}_7 + 4\text{H}_2\text{SO}_4 + 6\text{HCl} \rightarrow \text{Cr}_2(\text{SO}_4)_3 + \text{K}_2\text{SO}_4 + 7\text{H}_2\text{O} + 3\text{Cl}_2$
D $2\text{K}_2\text{CrO}_4 + \text{H}_2\text{SO}_4 \rightarrow \text{K}_2\text{Cr}_2\text{O}_7 + \text{K}_2\text{SO}_4 + \text{H}_2\text{O}$

Q5

Small portions of aqueous potassium iodide (KI) and acidified potassium manganate (VII) (KMnO_4) were separately added to four solutions.

The colour changes are shown in the table below:

solution number	potassium iodide	potassium manganate
1	colourless to brown	purple to colourless
2	colourless to brown	no change
3	no change	purple to colourless
4	no change	no change

Which solution(s) contained an oxidising agent?

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

Q6

The equation shows the reaction between copper(II) oxide and carbon.



What is the function of the copper(II) oxide in the reaction?

- A** catalyst
B oxidising agent
C reducing agent
D dehydrating agent

Q7

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

solution	potassium iodide	potassium manganate (VII)
1	colourless to brown	purple to colourless
2	colourless to brown	no change
3	no change	purple to colourless
4	no change	no change

Which solution/s contain/s an oxidising agent **only**?

- A 1
- B 2
- C 2 and 4
- D 1 and 3

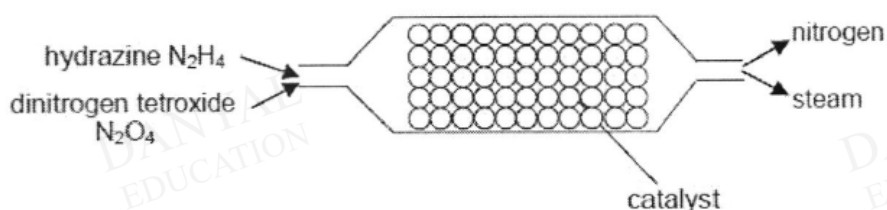
Q8

In which reaction does the oxidation state of iron remain unchanged?

- A $2\text{FeCl}_2 + \text{Cl}_2 \rightarrow 2\text{FeCl}_3$
- B $\text{FeCl}_2 + \text{Mg} \rightarrow \text{MgCl}_2 + \text{Fe}$
- C $\text{Fe} + 2\text{FeCl}_3 \rightarrow 3\text{FeCl}_2$
- D $\text{Fe}_2\text{O}_3 + 6\text{HCl} \rightarrow 2\text{FeCl}_3 + 3\text{H}_2\text{O}$

Q9

A rocket can be fuelled by hydrazine burning with dinitrogen tetroxide. The reaction in the rocket engine is shown in the following diagram.



Which of the following take(s) place in the rocket engine?

- 1 The oxidation state of nitrogen increased from -2 in hydrazine to 0 in nitrogen.
- 2 3.5 moles of gaseous products were produced when 1 mole of hydrazine is used.
- 3 Endothermic reaction occurs.

- A 2 only
- B 1 and 2 only
- C 2 and 3 only
- D 1, 2 and 3

Q10

The reaction scheme represents the process for obtaining pure silicon.



In which stages is silicon reduced?

A I only

C I and IV only

B I and II only

D II and III only

Answers

Redox Test 1.0

Q1 D

Q2 D

Q3 B

Q4 C

Q5 B

Q6 B

Q7 B

Q8 D

Q9 B

Q10 C

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