

Quiz (Redox Reactions)

Section A: Multiple-choice

- Which of the following conversions is an oxidation reaction?
 - $\text{Cr}_2\text{O}_3 \rightarrow \text{Cr}^{3+}$
 - $\text{CrO}_4^{2-} \rightarrow \text{Cr}_2\text{O}_7^{2-}$
 - $\text{Cr}_2\text{O}_7^{2-} \rightarrow \text{CrO}_4^{2-}$
 - $\text{Cr}^{3+} \rightarrow \text{CrO}_4^{2-}$
- Which of the following underlined substances is the oxidizing agent in the reaction?
 - $\text{CaCl}_2 + \underline{\text{Na}_2\text{CO}_3} \rightarrow 2\text{NaCl} + \text{CaCO}_3$
 - $\underline{\text{CuSO}_4} + \text{Fe} \rightarrow \text{FeSO}_4 + \text{Cu}$
 - $3\text{O}_2 + \underline{2\text{H}_2\text{S}} \rightarrow 2\text{H}_2\text{O} + 2\text{SO}_2$
 - $\text{ZnO} + \underline{\text{H}_2\text{SO}_4} \rightarrow \text{ZnSO}_4 + \text{H}_2\text{O}$
- What is the oxidation number of aluminium in $\text{Al}(\text{NH}_4)(\text{SO}_4)_2$?
 - 0
 - +1
 - +2
 - +3
- Consider the following equation:

$$a\text{Zn}(s) + 2\text{VO}_2^+(\text{aq}) + 8\text{H}^+(\text{aq}) \longrightarrow b\text{Zn}^{2+}(\text{aq}) + c\text{V}^{2+}(\text{aq}) + 4\text{H}_2\text{O}(l)$$
 Which of the following combinations is correct?

	<u>a</u>	<u>b</u>	<u>c</u>
A.	3	2	3
B.	2	2	2
C.	3	3	2
D.	2	3	3
- Which of the following observable changes can be made when potassium sulphite solution is added to acidified potassium permanganate solution?
 - The solution changes from orange to green.
 - The solution changes from yellow to colourless.
 - The solution changes from purple to colourless.
 - There is no observable change.
- What is the mole ratio of oxidizing agent to reducing agent in the reaction of zinc with concentrated sulphuric acid?
 - 1:2
 - 2:1
 - 1:4
 - 4:1
- Which of the following substances can turn acidified sodium dichromate solution from orange to green?

(1) $\text{CH}_2=\text{CH}_2(\text{g})$	(2) $\text{FeSO}_4(\text{aq})$	(3) $\text{KI}(\text{aq})$
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 - (1) and (2) only
 - (1) and (3) only
 - (2) and (3) only
 - (1), (2) and (3)

Suggested Answer**Section A**

1.	D	5.	C
2.	B	6.	B
3.	D	7.	C
4.	C	8.	A

Section B Structured questions

- (a) $\text{Cl}_2(\text{aq}) + \text{SO}_3^{2-}(\text{aq}) + \text{H}_2\text{O}(\text{l}) \longrightarrow 2\text{Cl}^-(\text{aq}) + \text{SO}_4^{2-}(\text{aq}) + 2\text{H}^+(\text{aq})$

(b) $\text{Cl}_2(\text{aq}) + 2\text{I}^-(\text{aq}) \rightarrow 2\text{Cl}^-(\text{aq}) + \text{I}_2(\text{aq})$
- (a) The solution changes from yellow to pale green.

(b) $\text{Fe}^{3+}(\text{aq})$ is the oxidizing agent.
The oxidation number of iron decreases from +3 to +2.