# Quiz (Redox Reactions)

## Section A: Multiple-choice

- 1. Which of the following conversions is an oxidation reaction?
  - A.  $Cr_2O_3 \rightarrow Cr^{3+}$ B.  $CrO_4^{2-} \rightarrow Cr_2O_7^{2-}$ C.  $Cr_2O_7^{2-} \rightarrow CrO_4^{2-}$ D.  $Cr^{3+} \rightarrow CrO_4^{2-}$
- 2. Which of the following underlined substances is the oxidizing agent in the reaction?
  - A.  $CaCl_2 + Na_2CO_3 \rightarrow 2NaCl + CaCO_3$  B. <u>CuSO\_4</u> + Fe  $\rightarrow$  FeSO\_4 + Cu
  - C.  $3O_2 + 2H_2S \rightarrow 2H_2O + 2SO_2$ D.  $ZnO + H_2SO_4 \rightarrow ZnSO_4 + H_2O$
- 3. What is the oxidation number of aluminium in Al(NH<sub>4</sub>)(SO<sub>4</sub>)<sub>2</sub>?
  - A. 0 B. +1 C. +2 D. +3
- 4. Consider the following equation:  $aZn(s) + 2VO_2^+(aq) + 8H^+(aq) \longrightarrow bZn^{2+}(aq) + cV^{2+}(aq) + 4H_2O(l)$

Which of the following combinations is correct?

	<u>a</u>	<u>b</u>	<u>C</u>
Α.	3	2	3
Β.	2	2	2
C.	3	3	2
D.	2	3	3

- 5. Which of the following observable changes can be made when potassium sulphite solution is added to acidified potassium permanganate solution?
  - A. The solution changes from orange to green.
  - B. The solution changes from yellow to colourless.
  - C. The solution changes from purple to colourless.
  - D. There is no observable change.
- 6. What is the mole ratio of oxidizing agent to reducing agent in the reaction of zinc with concentrated sulphuric acid?

Α.	1:2	Β.	2:1
C.	1:4	D.	4:1

7. Which of the following substances can turn acidified sodium dichromate solution from orange to green?

	(1) $CH_2 = CH_2(g)$	(2) FeSO₄(aq)	(3) KI(aq)
Α.	(1) and (2) only	В.	(1) and (3) only
C.	(2) and (3) only	D.	(1), (2) and (3)

- 8. Which of the following statements about concentrated nitric acid is/are correct?
  - (1) It is a strong oxidizing agent.
  - (2) It reacts with limestone to give nitrogen dioxide.
  - (3) It reacts with zinc to give hydrogen.
  - A. (1) only
  - C. (1) and (3) only

- B. (2) only
- D. (2) and (3) only
- Section B: Structured questions
- 1. Write an ionic equation for the reaction between aqueous chlorine and the following solution.
  - (a) Sodium sulphite solution
  - (b) Sodium iodide solution
- 2. (a) What would be observed when a few drops of sodium iodide solution is added to iron(III) sulphate solution?
  - (b) With reference to the change in oxidation number, identify the oxidizing agent in the reaction.

## **Suggested Answer**

#### **Section A**

1.	D	5.	С
2.	В	6.	В
3.	D	7.	С
4.	С	8.	A

# Section B Structured questions

- 1. (a)  $Cl_2(aq) + SO_3^{2-}(aq) + H_2O(I) \longrightarrow 2Cl^{-}(aq) + SO_4^{2-}(aq) + 2H^+(aq)$ 
  - (b)  $Cl_2(aq) + 2l^-(aq) \rightarrow 2Cl^-(aq) + l_2(aq)$
- 2. (a) The solution changes from yellow to pale green.
  - (b) Fe<sup>3+</sup>(aq) is the oxidizing agent.
    The oxidation number of iron decreases from +3 to +2.