Redox (MCQ)

1. A phosphate(V) ion has the formula PO_4^{3-}.

What is the formula for copper(I) phosphate(V)?

A $Cu(PO_4)_5$
B Cu_5PO_4
C $Cu(PO_4)_3$
D Cu_3PO_4

Your answer ☐ **[1]**

2. What is the oxidation number of Fe in K_2FeO_4?

A +4
B +5
C +6
D +7

Your answer ☐ **[1]**

3. Which reaction shows oxidation of sulfur?

A $2HBr + H_2SO_4 \rightarrow SO_2 + 2H_2O + Br_2$
B $SO_2 + 2NaOH \rightarrow Na_2SO_3 + H_2O$
C $8HI + H_2SO_4 \rightarrow 4I_2 + H_2S + 4H_2O$
D $H_2S + Cl_2 \rightarrow 2HCl + S$

Your answer ☐ **[1]**

4. What is the oxidation number of nitrogen in $Mg(NO_3)_2$?

A −3
B +2
C +5
D +6

Your answer ☐

[1]

5. Equations for two reactions that form H_2O are shown below.

$$2H_2O_2 \rightarrow 2H_2O + O_2$$
$$2H_2 + O_2 \rightarrow 2H_2O$$

Which statement is correct?

A. Hydrogen is reduced in both reactions.
B. Hydrogen is reduced in only one of the reactions.
C. Oxygen is oxidised in both reactions.
D. Oxygen is oxidised in only one of the reactions.

Your answer ☐

[1]

6. What is the oxidation number of vanadium in the ion $V_2O_7^{4-}$?

A. +5
B. +7
C. +10
D. +14

Your answer ☐

[1]

7. Which equation represents a redox reaction?

A. $Mg + 2HCl \rightarrow MgCl_2 + H_2$
B. $MgO + 2HCl \rightarrow H_2O + MgCl_2$
C. $MgCO_3 + 2HCl \rightarrow CO_2 + H_2O + MgCl_2$
D. $Mg(OH)_2 + 2HCl \rightarrow MgCl_2 + 2H_2O$

Your answer ☐

[1]

8. What is the formula of chromium(III) sulfate?

A. Cr_3SO_4
B. $Cr(SO_4)_3$
C. $Cr_2(SO_4)_3$
D. Cr_3SO_3

Your answer ☐

[1]

END OF QUESTION PAPER

Mark scheme – Redox (MCQ)

Question			Answer/Indicative content	Marks	Guidance
1			**D**	1 (AO1.2)	
			Total	**1**	
2			**C**	**1**	**ALLOW** +6 **Examiner's Comments** Nearly all candidates responded with the correct response of C. Candidates seem to have a very good understanding of applying oxidation number rules.
			Total	**1**	
3			**D**	**1**	**Examiner's Comments** Candidates needed to do a lot of work to solve this problem and most wrote oxidation numbers around the equations. This systematic process allowed most candidates to find that D is the only option in which sulfur is oxidised.
			Total	**1**	
4			C	1	**ALLOW** +5 **OR** 5+ in box **Examiner's Comments** Generally scored well.
			Total	**1**	
5			D	1	
			Total	**1**	
6			A	1	
			Total	**1**	
7			A	1	
			Total	**1**	
8			C	1	
			Total	**1**	