Q1.

Ammonia is oxidised as shown.

$$w\ NH_3 + x\ O_2 \rightarrow y\ H_2O + z\ NO$$

Which whole number values for *w*, *x*, *y* and *z* balance the equation?

	w	*x*	*y*	*z*	
A	2	3	3	2	⬭
B	4	7	4	4	⬭
C	4	5	6	4	⬭
D	6	7	9	6	⬭

(Total 1 mark)

Q2.

In which species is chlorine in its highest oxidation state?

A ClF_2^- ⬭

B ClO_4^- ⬭

C ClO_2 ⬭

D ClF_3 ⬭

(Total 1 mark)

Q3.

Which statement about this redox reaction is correct?

$3\ Sn^{2+}(aq) + Cr_2O_7^{2-}(aq) + 2\ H^+(aq) \rightarrow 2\ Cr^{3+}(aq) + 3\ SnO_2(s) + H_2O(l)$

A Sn^{2+} is the oxidising agent and it gains electrons. ⬭

B Sn^{2+} is the reducing agent and it gains electrons. ⬭

C $Cr_2O_7^{2-}$ is the oxidising agent and it gains electrons. ⬭

D $Cr_2O_7^{2-}$ is the reducing agent and it gains electrons. ⬭

(Total 1 mark)

Q4.

Which incomplete half-equation is balanced by adding two H^+ ions and one electron to the left-hand side?

A $CH_3CHO \rightarrow CH_3CH_2OH$ ○

B $VO^{2+} \rightarrow V^{3+} + H_2O$ ○

C $HNO_2 \rightarrow NO + H_2O$ ○

D $O_2 \rightarrow H_2O_2$ ○

(Total 1 mark)

Q5.

In which oxide is the named element in its highest oxidation state?

A chlorine in ClO_2 ○

B magnesium in MgO ○

C nitrogen in N_2O_4 ○

D sulfur in SO_2 ○

(Total 1 mark)

Q6.

In which of these substances is oxygen in the highest oxidation state?

A OF_2 ○

B H_2O ○

C O_2 ○

D H_2O_2 ○

(Total 1 mark)

Q7.

Which of these oxidation states is correct?

A Chlorine in Cl_2 is –1 ⬭

B Chromium in $K_2Cr_2O_7$ is +7 ⬭

C Fluorine in F_2O is –1 ⬭

D Hydrogen in NaH is +1 ⬭

(Total 1 mark)