

9.1 Redox Processes

Question Paper

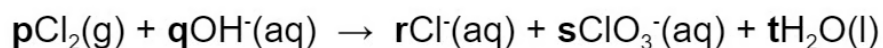
Course	DP IB Chemistry
Section	9. Redox Processes
Topic	9.1 Redox Processes
Difficulty	Medium

Time allowed: 20
Score: /10
Percentage: /100

Question 1

Oxidation numbers can be used to balance equations. Chlorine and hot aqueous sodium hydroxide react to produce chloride ions, chlorate ions and water.

What are the values of the coefficients **p**, **r** and **s** in the equation?



	p	r	s
A	3	5	1
B	3	6	2
C	2	5	1
D	2	4	2

[1 mark]

Question 2

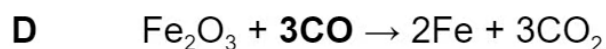
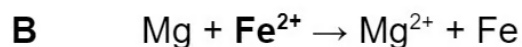
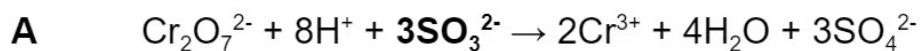
The chemistry of the Group VII elements often involves redox processes. Which of the following statements is correct?

- A** Bromine can oxidise chloride ions
- B** Iodide ions are the weakest reducing agent of the first four Group VII ions
- C** In reactions with water, chlorine is oxidised and reduced
- D** Fluorine is a weaker oxidising agent than chlorine

[1 mark]

Question 3

Four reactions are shown below. In which reaction is the species shown in bold acting as an oxidising agent?



[1 mark]

Question 4

In which compound are there two different elements with the same oxidation number?



[1 mark]

Question 5

When sulfuric acid and sodium iodide react, one of the reactions that takes place is shown by the equation below:



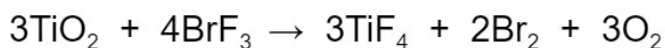
Which species has been oxidised in this reaction?

- A** I^- **B** SO_4^{2-} **C** Na^+ **D** H^+

[1 mark]

Question 6

The following reaction can be used to determine the mass of titanium dioxide in an ore.



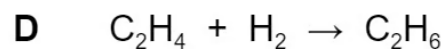
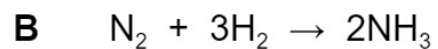
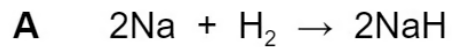
Which element increases in oxidation number in this reaction?

- A** fluorine
B bromine
C titanium
D oxygen

[1 mark]

Question 7

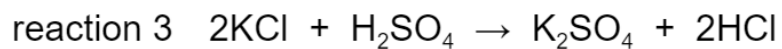
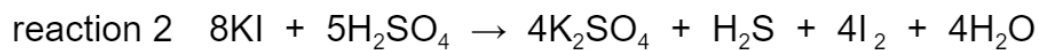
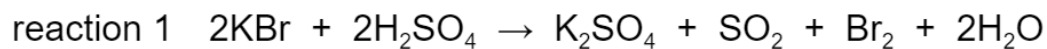
In which reaction does hydrogen behave as an oxidizing agent?



[1 mark]

Question 8

When solid potassium halides are added to concentrated sulfuric acid, the following reactions take place:



In each reaction, what is the largest change in the oxidation number of sulfur?

	Reaction 1	Reaction 2	Reaction 3
A	1	4	1
B	2	4	0
C	2	8	0
D	4	8	1

[1 mark]

Question 9

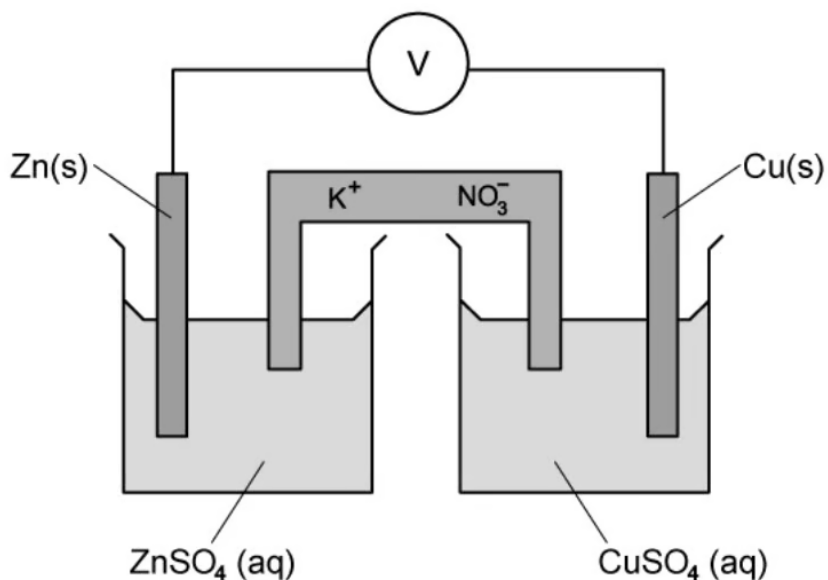
What is formed at the electrodes during the electrolysis of molten potassium iodide?

	Positive electrode	Negative electrode
A	K^+	I^-
B	K	I_2
C	I^-	K^+
D	I_2	K

[1 mark]

Question 10

Below is a diagram of a voltaic cell. When the cell is running, what is happening in the salt bridge?



- A** K⁺ ions flow to the zinc half-cell and NO₃⁻ ions flow to the copper half-cell
- B** K⁺ ions flow to the copper half-cell and NO₃⁻ ions flow to the zinc half-cell
- C** K⁺ and NO₃⁻ ions flow to the copper half-cell
- D** K⁺ and NO₃⁻ ions flow to the zinc half-cell

[1 mark]