

9.1 Redox Processes

Question Paper

Course	DPIB Chemistry
Section	9. Redox Processes
Topic	9.1 Redox Processes
Difficulty	Easy

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

Question 1

Which row correctly describes oxidation and reduction in terms of the transfer of electrons and changes in oxidation state?

	Transfer of electrons		Change in oxidation state	
	oxidation	reduction	oxidation	reduction
A	gain	loss	increase	decrease
B	loss	gain	increase	decrease
C	loss	gain	decrease	increase
D	gain	loss	decrease	increase

[1 mark]

Question 2

The heptahydrate mineral of magnesium sulfate is used in Epsom Salts for preparing therapeutic baths. Magnesium sulfate is also used in some medical applications.

What is the oxidation state of MgSO_4 ?

- A** -2
- B** +2
- C** +7
- D** 0

[1 mark]

Question 3

Which row describes the most common oxidation numbers of fluorine, oxygen and hydrogen in compounds?

	F	O	H
A	+7	-1	-1
B	+1	+2	+1
C	-7	-1	-1
D	-1	-2	+1

[1 mark]

Question 4

Solutions containing chlorate(I) ions decompose on heating as shown:



Which row is correct for the oxidation state of the chlorine in each ion?

	ClO^-	ClO_3^-	Cl^-
A	+1	+5	-1
B	+1	+3	+1
C	-1	+5	-1
D	-1	+3	+1

[1 mark]

Question 5

A student added a solution of iodine to a solution of sodium bromide. Which statement correctly describes what happens?

- A** No reaction occurs
- B** The bromide ions are oxidised
- C** The iodine atoms are oxidised
- D** Both the bromide and iodide ions undergo changes in their oxidation state

[1 mark]

Question 6

In which of the following reactions is the change in oxidation number the smallest for nitrogen?

- A** $\text{N}_2 + 3\text{H}_2 \rightarrow 2\text{NH}_3$
- B** $3\text{Mg} + \text{N}_2 \rightarrow \text{Mg}_3\text{N}_2$
- C** $4\text{NH}_3 + 5\text{O}_2 \rightarrow 4\text{NO} + 6\text{H}_2\text{O}$
- D** $2\text{NO} + \text{O}_2 \rightarrow 2\text{NO}_2$

[1 mark]

Question 7

In the compound $[\text{ICl}_2]^+[\text{SbCl}_6]^-$, the oxidation number of chlorine is -1 .

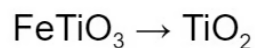
What are the oxidation numbers of I and Sb in the compound?

	I	Sb
A	+1	+5
B	+1	+7
C	+3	+5
D	+3	+7

[1 mark]

Question 8

Titanium dioxide is obtained from the ore ilmenite, FeTiO_3 .



What is the change in the oxidation number of titanium in the reaction?

- A +4 to +5
- B +3 to +4
- C No change in oxidation number occurs
- D +6 to +4

[1 mark]

Question 9

Below are four statements about voltaic and electrolytic cells. Identify the statement that is correct for voltaic cells but **not** for electrolytic cells

- A An electrolyte is needed in the cell
- B Ions are moving in the electrolyte
- C Oxidation occurs at the anode
- D Electrons flow from the negative to the positive electrode

[1 mark]

Question 10

What substance will be obtained at the positive electrode (anode) when molten KBr is electrolysed?

- A** K(l)
- B** Br(l)
- C** Br₂(l)
- D** K(s)

[1 mark]