

# 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
<b>A</b>	gain	loss	increase	decrease
<b>B</b>	loss	gain	increase	decrease
<b>C</b>	loss	gain	decrease	increase
<b>D</b>	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  $\text{MgSO}_4$ ?

- 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?

	<b>F</b>	<b>O</b>	<b>H</b>
<b>A</b>	+7	-1	-1
<b>B</b>	+1	+2	+1
<b>C</b>	-7	-1	-1
<b>D</b>	-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?

	$\text{ClO}^-$	$\text{ClO}_3^-$	$\text{Cl}^-$
<b>A</b>	+1	+5	-1
<b>B</b>	+1	+3	+1
<b>C</b>	-1	+5	-1
<b>D</b>	-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  $-1$ .

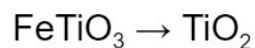
What are the oxidation numbers of I and Sb in the compound?

	I	Sb
<b>A</b>	+1	+5
<b>B</b>	+1	+7
<b>C</b>	+3	+5
<b>D</b>	+3	+7

[1 mark]

**Question 8**

Titanium dioxide is obtained from the ore ilmenite,  $\text{FeTiO}_3$ .



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** Br<sub>2</sub>(l)
- D** K(s)

[1 mark]