

8.3 Acid Deposition

Question Paper

Course	DP IB Chemistry
Section	8. Acids & Bases
Topic	8.3 Acid Deposition
Difficulty	Medium

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

Question 1

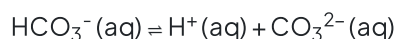
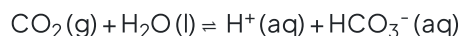
The pH of clean rain water is around 5.5. Which substance is responsible for this?

- A. Methane
- B. Carbon dioxide
- C. Nitrogen oxides
- D. Sulfur dioxide

[1 mark]

Question 2

Which statement is **not** true about the increasing levels of atmospheric carbon dioxide?



- A. The concentration of HCO_3^- increases in water bodies
- B. The concentration of H^+ increases in water bodies
- C. The pH of lakes and oceans falls as the CO_2 levels increase
- D. The increasing concentration of CO_3^{2-} enables marine organisms to build thicker shells

[1 mark]

Question 3

What is a major acid responsible for acid rain and originates from car engines?

- A. H_2SO_4
- B. HNO_3
- C. SO_2
- D. NO_2

[1 mark]

Question 4

What are three consequences of acid rain?

- I. Corrosion of marble statues
- II. Ozone depletion
- III. Leaching of Al^{3+}

- A. I and II only
- B. I and III only
- C. II and III only
- D. I, II and III

[1 mark]

Question 5

Some coal contains as much as 3% sulfur. How much sulfur dioxide ($M = 64.07 \text{ g mol}^{-1}$) is produced by burning a lump of coal of mass 125 g? ($A_r \text{ S} = 32.07$)

- A. $\frac{32.07 \times 100 \times 64.07}{125 \times 3}$
- B. $\frac{125 \times 3 \times 64.07}{100 \times 32.07}$
- C. $\frac{125 \times 64.07}{32.07}$
- D. $\frac{125 \times 3 \times 32.07}{100 \times 64.07}$

[1 mark]

Question 6

Which are true about the effect of acid deposition on plants?

- I. Essential minerals are lost
- II. Toxic minerals can be absorbed from the soil
- III. Respiration and photosynthesis are reduced

- A. I and II only
- B. I and III only
- C. II and III only
- D. I, II and III

[1 mark]

Question 7

Which are true about the effect of acid deposition on human health?

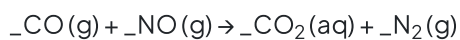
- I. Acid rain can burn the skin
- II. Acid particulates can trigger asthmatic attacks
- III. Toxic metal ions can be ingested

- A. I and II only
- B. I and III only
- C. II and III only
- D. I, II and III

[1 mark]

Question 8

The conversion of toxic emissions into harmless products takes place in catalytic converters as follows:



The sum of the coefficients is

- A. 4
- B. 5
- C. 6
- D. 7

[1 mark]

Question 9

Which can be used to reduce NO_x emissions ?

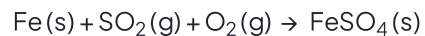
- I. Catalytic converters in cars
- II. Lower temperature of combustion
- III. Blended gasoline-alcohol fuel

- A. I and II only
- B. I and III only
- C. II and III only
- D. I, II and III

[1 mark]

Question 10

Iron structures can be damaged by dry deposition such as the equation below:



Which is true?

- I. Iron is a reducing agent
- II. Sulfur is a reducing agent
- III. The enthalpy change is ΔH_f

- A. I and II only
- B. I and III only
- C. II and III only
- D. I, II and III

[1 mark]