IB Topic 8.5 Acid Deposition

Use the 3 bookmarked videos on my website to answer the questions below. Make sure to pay close attention to the reactions. Your textbook pages 688 – 694 are great resources as well.

**Acid deposition**

**1)** State an equation to show why rainwater is naturally acidic.

**2)** State a natural and man-made source of sulfur dioxide (SO2) and nitrogen monoxide (NO).

**3)** Acid rain has a pH of less than 5.0. Explain how the burning of coal can lead to the formation of acid rain.

**4)** Outline the process responsible for the production of acid rain from the oxides of nitrogen.

**Effects of acid deposition**

**1)** Acid rain can cause damage to limestone buildings and marble statues. Write an equation to show the reaction of acid rain with limestone or marble (containing CaCO3).

**2)** Outline how acid rain can damage the growth of trees and plants.

**3)** Describe the effects of acid rain on aquatic organisms such as fish.

**4)** Describe 3 possible effects of acid rain on human health.

**Reduction of SO2 and NOx emissions**

**1.** (a) Explain, with an equation, how nitrogen monoxide (NO) is formed in internal combustion engines.

(b) Explain how a catalytic converter works and give the equation for the catalyzed reaction between carbon monoxide, CO, and nitrogen monoxide, NO.

(c) Describe another method of reducing NO emissions in internal combustion engines.

**2.** Sulfur dioxide (SO2) is an acidic gas that is emitted from coal burning power stations.

(a) State the equation for the formation of SO2 from the combustion of coal.

(b) Methods for reducing SO2 emissions can be classified as pre, during, or post combustion. Give details, including equations, for each of the above methods.

(i) Pre-combustion

(ii) During combustion

(iii) Post-combustion

**3**. Explain how the addition of calcium oxide and calcium hydroxide to lakes neutralizes the effects of acid rain.