CH3041 Tutorial 1 Air Chemistry

Name:

1. The exhaust of an automobile is found to contain 2 percent CO (20 000 ppmv) at a temperature of 80° C. Express the **concentration of CO** in the exhaust gas in $\mu g/m^3$ which is another commonly used gas concentration unit. Assume ideal gas behaviour for the gas.

2. Using the Barometric Law $p_z = p_o e^{(-z / H)}$ where the scale factor *H* is 8.4 km calculate the **partial pressure of oxygen** in Pa at 6.2 km given that the volume percentage of oxygen in air at sea level is 20.946%. Atmospheric pressure at sea level is 1.013×10^5 Pa.

3. **CFCs** are responsible for the depletion of stratospheric ozone in the polar regions. Explain the physico-chemical basis for this phenomenon.

4. Draw a figure illustrating the different **regions** of the **atmosphere** and the accompanying temperature profile. Explain the variation in temperature with altitude.