Answers to Assignment 9

12.16

$$PV = nRT$$

$$n = \frac{PV}{RT} = \frac{1.01\times10^5 \times 2.00\times10^3}{8.31\times310} = 0.0784\text{mol}.$$

12.61

a) $P_{O2} = \frac{n_{O2}}{n_T} P_T = 20.9\% \times 3.30\times10^4 = 6.9\times10^3\ \text{N/m}^3.$

b) $P_{O2}^S = \frac{n_{O2}}{n_T} P_T^S = 20.9\% \times 1.01\times10^5 = 2.11\times10^4\ \text{N/m}^3$

$$\frac{n_{O2}^S}{n_T} = \frac{P_{O2}^S}{P_T} = \frac{2.11\times10^4}{3.30\times10^4}\times100\% = 63.6\%$$

c) Because the partial pressure of vapor on very high mountains is lower than that at sea level.