Problem set 11

1) A gas mixture at 350 K and 300 kPa has the following volumetric analysis: 65% N\textsubscript{2}, 20% O\textsubscript{2}, and 15% CO\textsubscript{2}. Determine the mass fraction and partial pressure of each gas.

2) An insulated tank that contains 1 kg of O\textsubscript{2} at 15°C and 300 kPa is connected to a 2-m\textsuperscript{3} uninsulated tank that contains N\textsubscript{2} at 50°C and 500 kPa. The valve connecting the two tanks is opened, and the two gases form a homogeneous mixture at 25°C. Determine:
   a) The final pressure of the tank.
   b) The heat transfer.
   c) The entropy generated during the process.