1. The electron configuration for an iron atom is [Ar] 4s² 3d⁶. For the Fe(H₂O)₆²⁺ complex,
   a. Draw an energy level diagram showing each of the occupied outer electron orbitals of the iron ion. Clearly show how many electrons are in each orbital.
   
   b. Define Lewis acid and Lewis base; identify the Lewis base and the Lewis acid in the complex.

2. Compare the vapor pressures of C₃H₇OH, CH₃OCH₂CH₃, and CH₃CH₂CH₃ following these steps:
   a. Draw correct Lewis structures for each.
   
   b. Identify all the intermolecular forces of attraction that exist between like molecules for each of these three substances.
   
   c. Define vapor pressure and draw a diagram to clearly explain its definition.
   
   d. Rank order these compounds in terms of increasing vapor pressure.
   
   e. Fully support your predictions using fundamental physical principles and appropriate diagrams.