Unit 3 - Intermolecular Forces and Properties - Free Response I

Question ___ **Name:_____**

a) A rigid 7.80 L sealed vessel containing 2.700 mol of $O_{2(g)}$, 0.600 mol of $C_2H_{4(g)}$, and 2.400 mol of $Ne_{(g)}$ has an internal temperature of 85.0°C.

I. Calculate the total pressure in the cylinder.

II. Find the mole fraction of O_2 in the vessel.

b) At low temperatures and high pressures ethene gas, $C_2H_{4(g)}$, does not behave like an ideal gas. Use chemical principles to explain why this is.

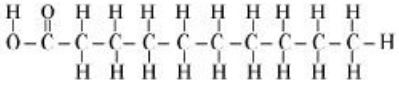
c) A pure sample of carbon tetrafluoride, CF_4, has a higher boiling point than a pure sample of methane, CH_4.

I. Identify the type(s) of intermolecular force(s) that exists in pure samples of each compound.

II. Explain why the boiling points of these pure samples differ.

d) A pure sample of which of the following compounds is most likely to be a solid at room temperature? Justify your answer in terms of intermolecular interactions.

a.



b.