

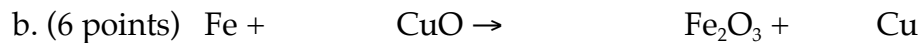
Sample exam 2

Open notes, labs, handouts; closed book, 50 minutes, no collaboration

Answer all questions.

1. (10 points) How many moles are there in 880.0 g of CO₂?

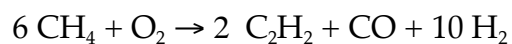
2. Balance the following chemical equations:



c. (12 points each) This is a combustion reaction. You must complete the equation before balancing

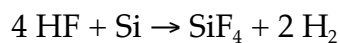


3. (15 points) Acetylene, C₂H₂, can be produced from methane by the reaction:



How many grams of acetylene can be produced from 64 grams of methane?

4. (12 points) According to the equation, what volume of H₂ would be obtained from 4 L of HF, assuming constant temperature and pressure?



5. (5 points) Assuming that air is 21.0% oxygen and 71.0% nitrogen by volume, what is the partial pressure of oxygen (in torr) when the atmospheric pressure is 740 torr?

6. (12 points each) A 10.0 L gas sample at 25°C and 700 mm Hg is depressurized to 500 mm Hg and heated to 227°C. What volume does the sample occupy under these conditions?

7. (5 points) Why are gases so much more compressible than liquids or solids?

8. (5 points) If it takes 1.44 kcal of heat to melt 1.0 mol of solid water (ice), how much heat will be released when 1.0 mol of liquid water freezes and forms ice?

9. (10 points) Which has the greater heat of vaporization, CH_4 or H_2O ?

10. (10 points) Place the following substances in order of **increasing** melting points: KCl , H_2O , H_2S .