**Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 11/16/22**

**CH 111 Workshop 8 – Chapters 7 & 8**

1. Hydrogen gas, a potential future fuel, can be made by the reaction of methane gas and steam.

Use the following bond energies to calculate for this reaction. The bond energies of ,

, and are 414 kJ, 464 kJ, 436 kJ, and 799 kJ, respectively.

1. Explain why and are both nonpolar even though they contain polar bonds.
2. Determine whether each of the following molecules is polar or nonpolar.

1. Determine the electron geometry, molecular geometry, bond angles, and hybridization on the central atom for each of the following molecules.

1. Answer the following about the nitrogen-oxygen bond in and .
   1. Which compound has the longer nitrogen oxygen bond?
   2. Which nitrogen-oxygen bond requires more energy to break?