

Answer the following questions (1 point each) to add up to 5 points back to your exam score.

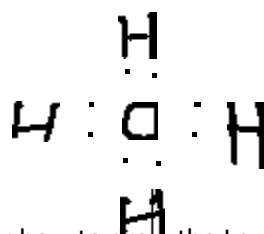
Student Name

**1. Choose any isotope of an element and answer the following**

- Write the isotopic formula **Carbon-14  $^{14}\text{C}$**
- How many neutrons in the isotope **mass number = P+N  $14=6+N$   $14-6= 8$  Neutrons**
- How many protons are in the isotope **6 protons**
- How many electrons are in the isotope **6 electrons**
- What is the mass number for the isotope **mass number 14**

**2. Choose any molecular compound with 3 to 5 atoms in it.**

- Draw the Lewis structure.



- Give step by step directions for how to draw the Lewis Structure.  
**Carbon is in group four and has four valence electrons, hydrogen is in group one and has one valence electron, but there are 4 hydrogen atoms. Hydrogens one valence electron is multiplied by four and added to Carbons four valence electrons to give a total of 8 electron pairs. Carbon is centered as hydrogen will always go to the outside. The electrons are distributed evenly around carbon and then hydrogen is bonded to carbon.**
- Give the molecular shape  
**The molecular shape is tetrahedral**
- Give an explanation for how you determined the shape  
**I determined this because the four carbon pairs are bonded together evenly with the hydrogen to form the tetrahedral shape.**
- Is your molecule polar or nonpolar  **$\text{CH}_4$ - methane is nonpolar.**

**3. Explain what hydrogen bonding is.**

**Hydrogen bonding occurs when hydrogen is bonded to F, O, or N. Hydrogen bonding allows water to exist in a liquid form, without hydrogen bonding water would exist as a gas.**

- Give an example of a molecule that would hydrogen bond  
**Oxygen is a molecule that binds to hydrogen, forming**