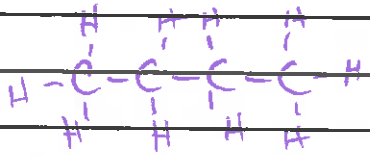
Chem 1 Smells Quiz 1 Name Key per____

	ALT 5: I can describe how and why atoms form bonds.

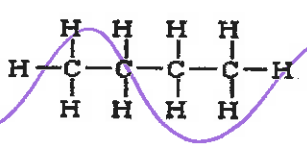
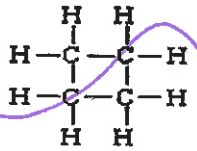
1. Describe the difference between a molecular formula and a structural formula. Give an example of each.

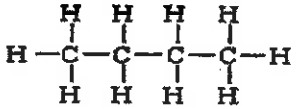
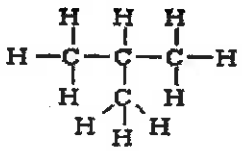
• molecular tells # & types of atoms C_4H_{10}

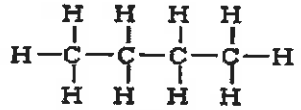
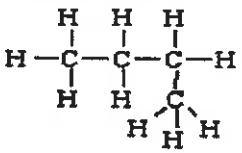
• Structural tells ↑ and how they are connected



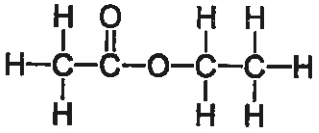
2. For each pair of molecules below, indicate which are isomers and which are identical.

(a)   Isomers / Identical VOID

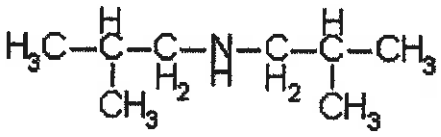
(b)   Isomers / Identical

(c)   Isomers / Identical

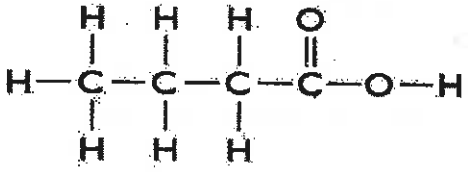
3. From the compounds drawn below, indicate which would have a smell that is "minty", "sweet" or "fishy" by comparing their structures.

a. 

sweet

b. 

fishy

c. 

putrid

4. Draw the Lewis Dot Symbol for the following elements, indicate the number of bonds each will make.

a. C # bonds 4

b. Ar # bonds 0

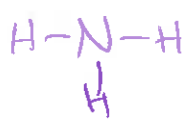
c. P # bonds 3

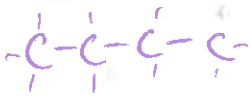
d. O # bonds 2

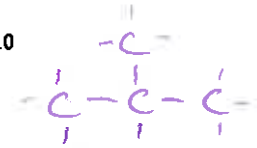
5. Draw a structural formula for the following compounds:

a. CO_2 b. NH_3 c/d. <u>two</u> isomers of C_4H_{10}

O=C=O

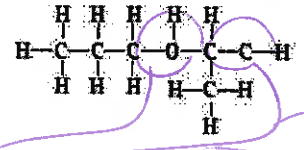




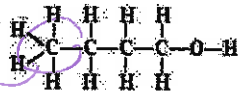


6. Circle the structural formula(s) below that could exist according to the HONC 1234 rule?

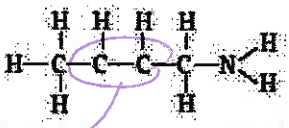
a.



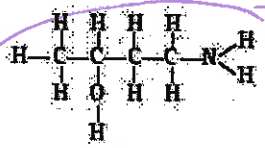
b.



c.



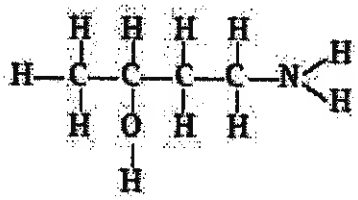
d.



e. List two specific ways the other molecules don't follow the HONC 1234 rule

C needs 4 bonds ; O needs 2 bonds.

7. Write the molecular formula for the compound shown:



Answer: $C_4H_{11}NO$

8. Explain how a covalent bond is formed and why atoms form them?

Formed by sharing e^-, so that each element has a full outer shell.

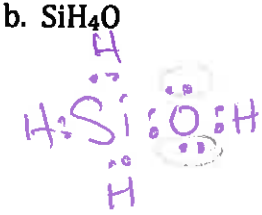
9. A single line connecting two atoms in a structural formula represents 2 (number) shared electrons. Two lines connecting the atoms represents a double (word) bond with 4 (number) electrons being shared. A triple (word) bond is shown using 3 (number) lines to connect the atoms and has 6 shared (word) electrons (word).

10. Draw the Lewis Dot Structure for the following molecules. Then indicate how many shared pairs and how many lone pairs each molecule has.

a. AsH_3

shared pairs 3
lone pairs 1

b. SiH_4O

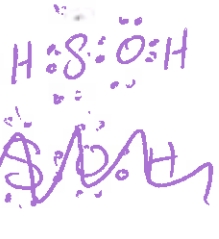


shared pairs 5
lone pairs 2

c. $SeCl_2$

shared pairs 2
lone pairs 8

d. SOH_2



shared pairs 3
lone pairs 4