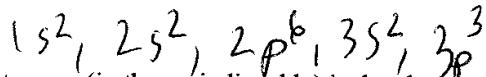


Sign Name key Print Name _____
 Please show work on all questions for partial credit even on questions which do not specify. (25 total pts)

1. (a) Give the electron configuration for the element **P** starting from $1s^2$ (2 pts)

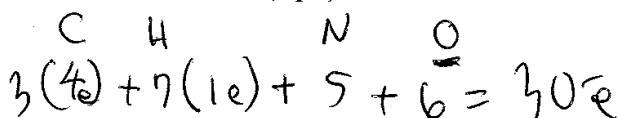


(b) What group (in the periodic table) is the element **P** in? 5A (1 pt)

(c) How many valence electrons is in the element **P**? 5 (1 pt)

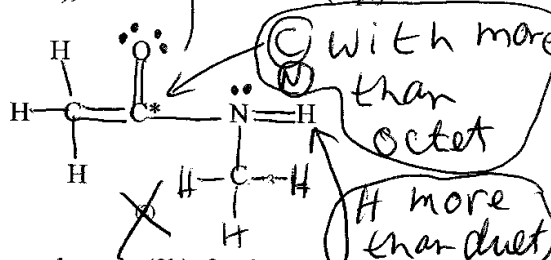
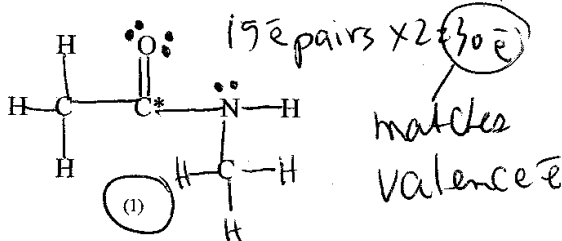
2. (a) Given the following formula, calculate the number of **valence electrons for the molecule**.

Show work. C_3H_7NO (4 pts)



$19 \text{ pairs} \times 2 = 38e$
 does not match

(b) Given the following 2 Lewis Dot structures (for the formula above), circle the correct one. (1 pt)



3. VSEPR: Given the Lewis Dot structure which you chose above in (2b), for the atom with the *

a) What is the number of electron domains (VSEPR electron pairs) around the atom with the * 3
 (1/2 pt each, 2 pts total)

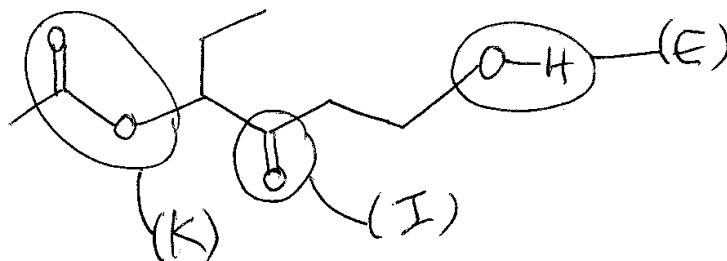
b) How many lone pairs on the atom with the * zero

c) What is the structure of the electron pairs at the atom with the * trigonal planar

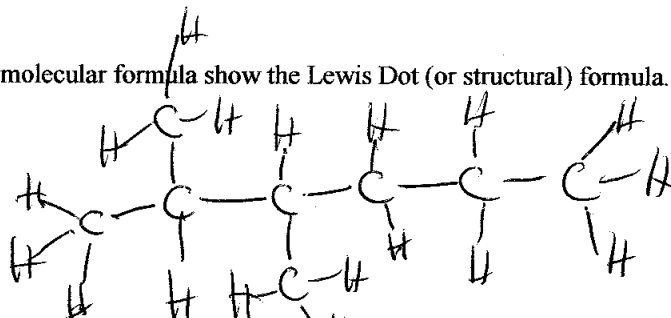
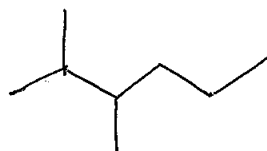
d) What is the structure of the molecule at the * trigonal planar

4. Given the following molecule, fill in the parenthesis with the letter of the functional group.

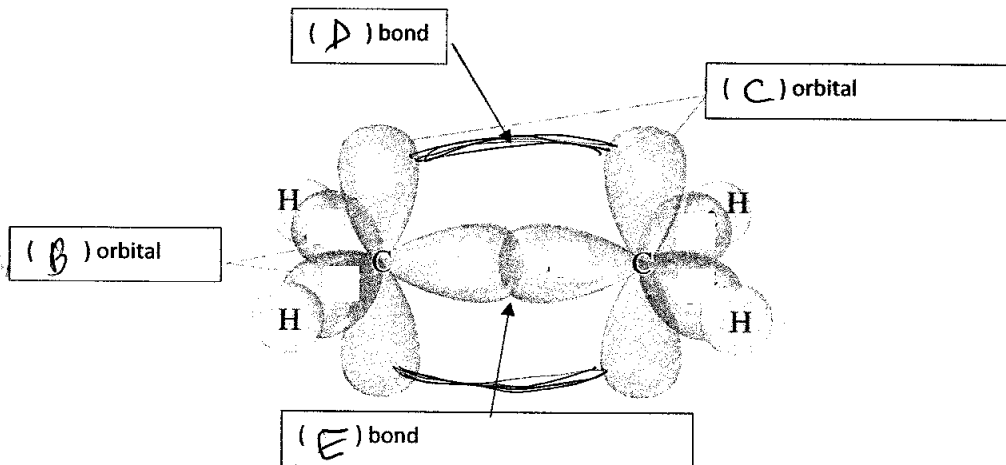
(A) alkene (B) alkyne (C) arene (D) alkyl halide (E) alcohol (F) ether (G) amine
 (H) aldehyde (I) ketone (J) carboxylic acid (K) ester (L) amide (M) acid halide (N) acid anhydride (You may use the same letter multiple times) (2 pts each, 6 pts total)



5. For the following skeletal molecular formula show the Lewis Dot (or structural) formula. (4 pts)



6. Match the labeling in the following parenthesis. Each parenthesis can hold one to multiple letters. Each letter may be used once, no time or multiple times (A) sp^3 hybridized orbitals (B) sp^2 hybridized orbitals (C) unhybridized p orbital (D) π bond (E) σ bond (F) s orbital (4 pts, 1 pt each)



Extra Credit: What is the intermolecular force in the molecule shown below in 3D? Circle one. (4 pts)

- (a) Ionic bonding (b) hydrogen bonding (c) dipolar interaction (d) van der Waals



H directly attached to F, O, N

Hydrogen bonding

N more EN than C δ^- N δ^+ C

Vector sum \neq zero - molecule does also have dipole but H bond is stronger so call by stronger name

Sign Name _____ Print Name _____
 Please show work on all questions for partial credit even on questions which do not specify. (25 total pts)

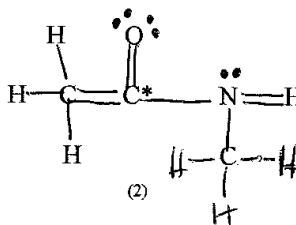
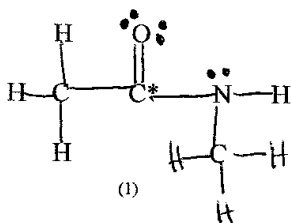
1. (a) Give the electron configuration for the element **P** starting from $1s^2$ (2 pts)

(b) What group (in the periodic table) is the element **P** in? _____ (1 pt)

(c) How many valence electrons is in the element **P**? _____ (1 pt)

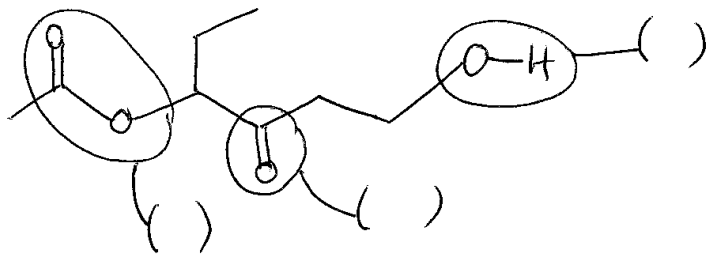
2. (a) Given the following formula, calculate the number of **valence electrons for the molecule**. Show work. C_3H_7NO (4 pts)

(b) Given the following 2 Lewis Dot structures (for the formula above), circle the correct one. (1 pt)

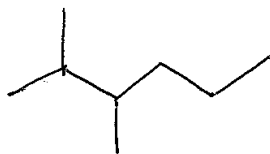


3. VSEPR: Given the Lewis Dot structure which you chose above in (2b), for the atom with the *
- What is the number of electron domains (VSEPR electron pairs) around the atom with the * _____ (1/2 pt each, 2 pts total)
 - How many lone pairs on the atom with the * _____
 - What is the structure of the electron pairs at the atom with the * _____
 - What is the structure of the molecule at the * _____

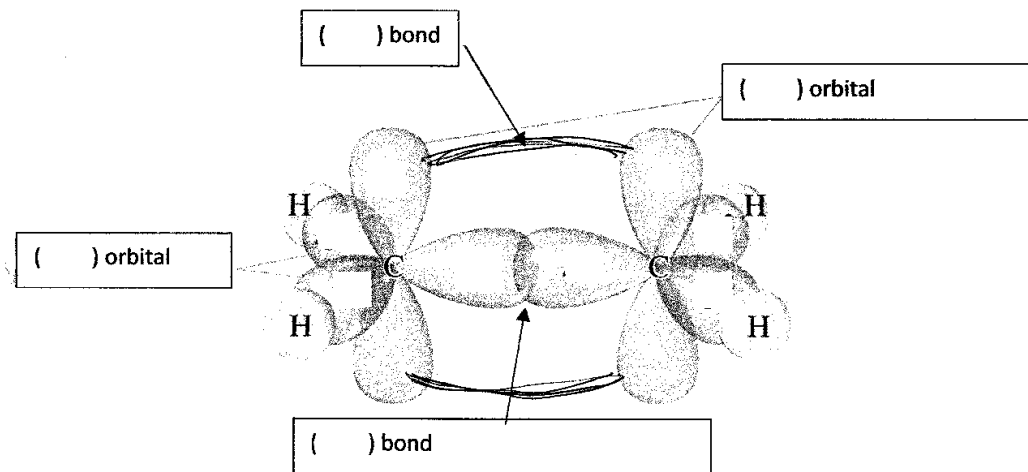
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 (A) alkene (B) alkyne (C) arene (D) alkyl halide (E) alcohol (F) ether (G) amine
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