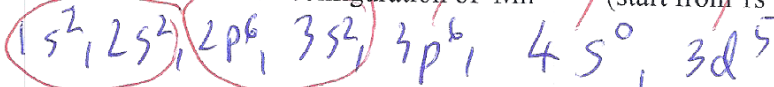


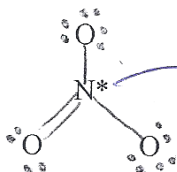
Name key Print Name _____

Please show work on all questions for partial credit even on questions which do not specify. (20 total pts)

1. Give the electron configuration of Mn^{+2} (start from $1s^2, 2s^2, \dots$ etc) (5 pts)



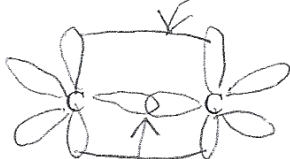
2. For the molecule shown, show work for your calculation of formal charge on the atom with the * (3 pts).



$$f.c. = 5 - \frac{8}{2} = +1$$

BA-1/2

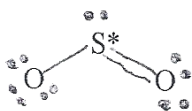
3. Given the following orbital diagram circle the correct bond. (4 pts, 2 pts each)



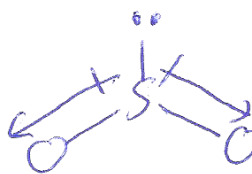
(π) or (σ) (circle one) bond

[(π) or (σ)] (circle one) bond

4. Given the following Lewis Dot structure, answer the following. (8 pts, one pt per letter)



Lewis Dot Structure



in plane

your 3D structure with dipole arrows

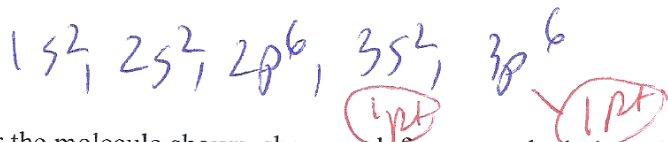
- a. Number of charge clouds on the atom with the * 3
- b. Number of lone pairs on the atom with the * 1
- c. Geometry of the molecule around the atom with the * bent
- d. bond angle 120°
- e. Draw a 3 D structure of the molecule in the space above
- f. Draw ALL non zero dipole moment arrows in the figure that you drew.
- g. Is the molecule [(polar) of (non polar)] (circle one parenthesis)
- h. What is the predominant intermolecular force in the molecule ?
 [(London forces) or (dipole-dipole) or (Hydrogen bonding)] (circle one)

Name Key Print Name _____

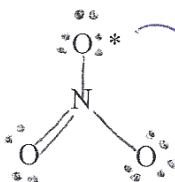
Please show work on all questions for partial credit even on questions which do not specify. (20 total pts)

1. Give the electron configuration of S^{2-} (start from $1s^2, 2s^2, \dots$ etc) (5 pts)

Color



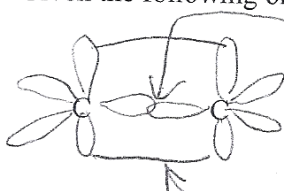
2. For the molecule shown, show work for your calculation of formal charge on the atom with the * (3 pts).



$$f.c. = 6 - \frac{2}{2} - 6 = -1$$

BA
-1 1/2

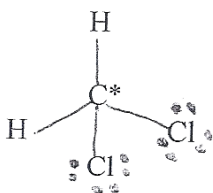
3. Given the following orbital diagram circle the correct bond. (4 pts, 2 pts each)



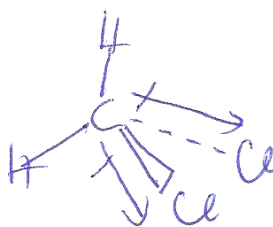
[(π) or (σ)] (circle one) bond

[(π) or (σ)] (circle one) bond

4. Given the following Lewis Dot structure, answer the following. (8 pts, one pt per letter)



Lewis Dot Structure



your 3D structure with dipole arrows

EN
C-H
nearly
zero

a. Number of charge clouds on the atom with the * 4

b. Number of lone pairs on the atom with the * zero

c. Geometry of the molecule around the atom with the * te tetrahedral

d. bond angle 109.5°

e. Draw a 3 D structure of the molecule in the space above

f. Draw ALL non zero dipole moment arrows in the figure that you drew.

g. Is the molecule [(polar) or (non polar)] (circle one parenthesis) (vs ≠ 0)

h. What is the predominant intermolecular force in the molecule ?

[(London forces) or (dipole-dipole) or (Hydrogen bonding)] (circle one)

Name Key Print Name _____

Please show work on all questions for partial credit even on questions which do not specify. (20 total pts)

1. Given the following formula, complete the Electron Dot (Lewis Dot) structure: (6 pts)

a. Show your work for coming up with the valence electron count. NHCl_2 (3 pts)

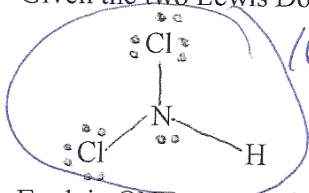
$$5e + 1e + (7e) \times 2 = 20e$$

N-5A

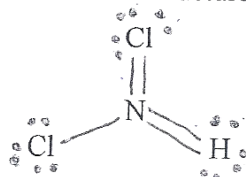
H-1A

Cl-7A

b. Given the two Lewis Dot structures, circle the correct Lewis Dot structure. (2 pt)



10 pairs $\times 2 = 20e$

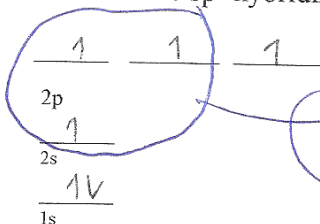


13 pairs $\times 2 = 26e$

c. Explain ONE reason why the one you did NOT choose is INCORRECT. (1 pt)

① too many e ② H has more than duet ③ N cannot expand octet period 2

2. Given the valence orbital diagram for the element carbon (in the excited state), circle the orbitals used for the sp^2 hybridized electron orbital. (2 pts)

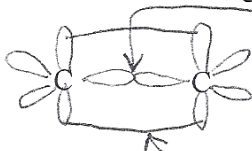


included 3p - 1/2 pt

used 1s - 1/2 pt

1s + 2 p orbitals = sp^2

3. Given the following orbital diagram which is a π / σ bond. (4 pts, 2 pts each)



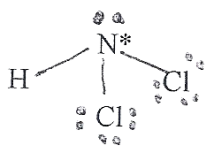
[π] or [σ] (circle one)

[π] or [σ] (circle one)

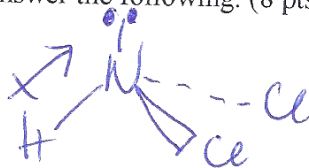
N-Cl ok $\rightarrow \sigma \leftarrow$

hard to tell w/o EN table

4. Given the following Lewis Dot structure, answer the following. (8 pts, one pt per letter)



Lewis Dot Structure



your 3D structure with dipole arrows

N & Cl have same EN

a. Number of charge clouds on the atom with the * 4

b. Number of lone pairs on the atom with the * 1

c. Geometry of the molecule around the atom with the * trigonal pyramidal

d. bond angle 109.5

e. Draw a 3 D structure of the molecule in the space above

f. Draw ALL non zero dipole moment arrows in the figure that you drew.

g. Is the molecule [(polar)] of [(non polar)] (circle one parenthesis)

h. What is the predominant intermolecular force? [(London forces)] or [(dipole-dipole)] or [(H bonding)] (circle one)

Name _____ Print Name _____

Please show work on all questions for partial credit even on questions which do not specify. (20 total pts)

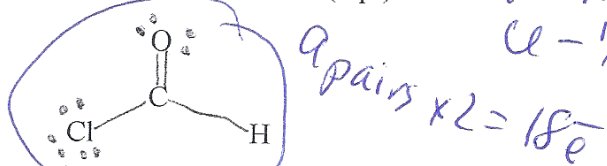
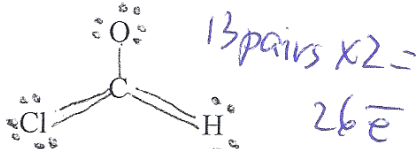
1. Given the following formula, complete the Electron Dot (Lewis Dot) structure: (6 pts) color

a. Show your work for coming up with the valence electron count. COHCl (3 pts)

$$4e^- + 6e^- + 1e^- + 7e^- = 18e^-$$

C - 4A
O - 6A
H - 1A
Cl - 7A

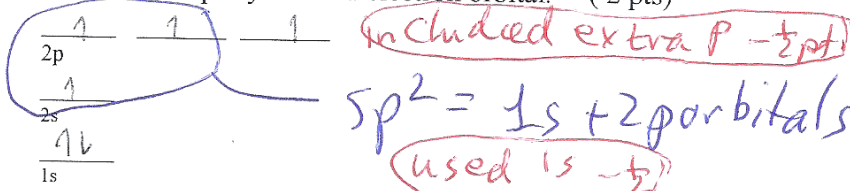
b. Given the two Lewis Dot structures, circle the correct Lewis Dot structure. (2 pt)



c. Explain ONE reason why the one you did NOT choose is INCORRECT. (1 pt)

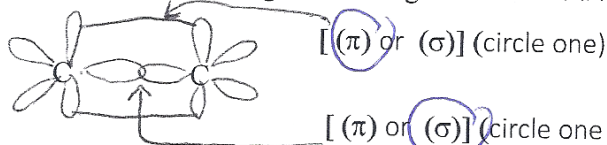
① too many e⁻ ② H more than duet ③ C cannot expand

2. Given the valence orbital diagram for the element carbon (in the excited state), circle the orbitals used for the sp² hybridized electron orbital. (2 pts)

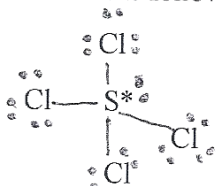


o det, period 2 + lower

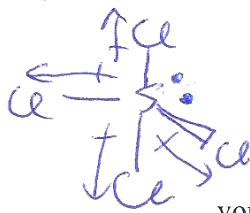
3. Given the following orbital diagram which is a π / σ bond. (4 pts, 2 pts each)



4. Given the following Lewis Dot structure, answer the following. (8 pts, one pt per letter)



Lewis Dot Structure



your 3D structure with dipole arrows

(Cl more EN S)

OK S-Cl
+ → or ←
hard to tell EN w/o # EN table

a. Number of charge clouds on the atom with the * 5

b. Number of lone pairs on the atom with the * 1

c. Geometry of the molecule around the atom with the * see saw

d. bond angle 120°, 90°

e. Draw a 3 D structure of the molecule in the space above

f. Draw ALL non zero dipole moment arrows in the figure that you drew.

g. Is the molecule [(polar) or (non polar)] (circle one parenthesis)

h. What is the predominant intermolecular force in the molecule? [(London forces) or (dipole-dipole) or (Hydrogen bonding)] (circle one)

Name _____ Print Name _____

Please show work on all questions for partial credit even on questions which do not specify. (20 total pts)

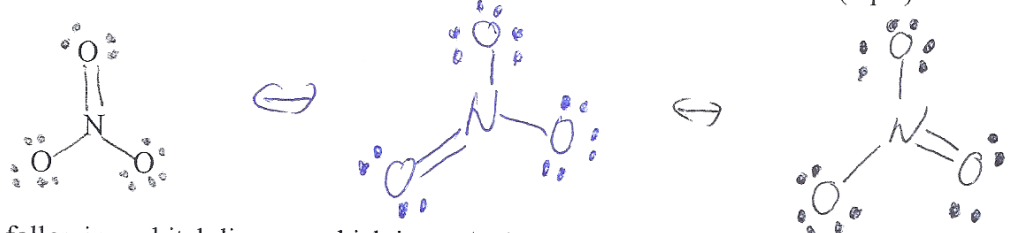
1. Choose the larger by circling the larger. (6 pts, 2 pt each letter)

- a. [Li] vs (Li^+) (circle one) (S) vs (S^{2-}) (circle one)
- b. (First Ionization Energy of K) vs (First Ionization Energy of Cs) (circle one parenthesis)
- c. (Electronegativity of Cl) vs (electronegativity of B) (circle one parenthesis)

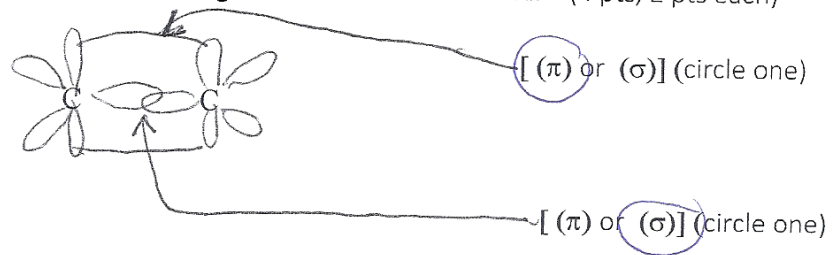
1st IE - opposite to size

↓ IE smaller

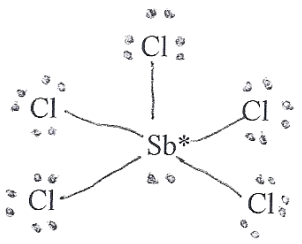
2. Draw at least one resonance structure for the given correct Lewis Dot structure. (2 pts)



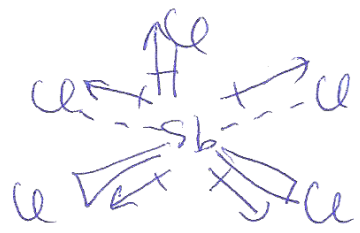
3. Given the following orbital diagram which is a π / σ bond. (4 pts, 2 pts each)



4. Given the following Lewis Dot structure, answer the following. (8 pts, one pt per letter)



Lewis Dot Structure



your 3D structure with dipole arrows

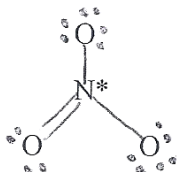
- a. Number of charge clouds on the atom with the * 6
- b. Number of lone pairs on the atom with the * 1
- c. Geometry of the molecule around the atom with the * square pyramidal
- d. bond angle 90°
- e. Draw a 3 D structure of the molecule in the space above
- f. Draw ALL non zero dipole moment arrows in the figure that you drew.
- g. Is the molecule (polar) of (non polar) (circle one parenthesis)
- h. What is the predominant intermolecular force in the molecule ?
 [(London forces) or (dipole-dipole) or (Hydrogen bonding)] (circle one)

Name _____ Print Name _____

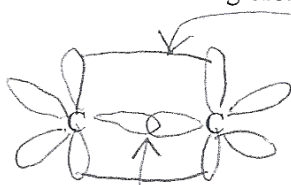
Please show work on all questions for partial credit even on questions which do not specify. (20 total pts)

1. Give the electron configuration of Mn^{+2} (start from $1s^2, 2s^2, \dots$ etc) (5 pts)

2. For the molecule shown, show work for your calculation of formal charge on the atom with the * (3 pts) .



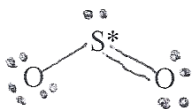
3. Given the following orbital diagram circle the correct bond. (4 pts, 2 pts each)



[(π) or (σ)] (circle one) bond

[(π) or (σ)] (circle one) bond

4. Given the following Lewis Dot structure, answer the following. (8 pts, one pt per letter)



Lewis Dot Structure

your 3D structure with dipole arrows

a. Number of charge clouds on the atom with the * _____

b. Number of lone pairs on the atom with the * _____

c. Geometry of the molecule around the atom with the * _____

d. bond angle _____

e. Draw a 3 D structure of the molecule in the space above

f. Draw ALL non zero dipole moment arrows in the figure that you drew.

g. Is the molecule [(polar) of (non polar)] (circle one parenthesis)

h. What is the predominant intermolecular force in the molecule ?

[(London forces) or (dipole-dipole) or (Hydrogen bonding)] (circle one)

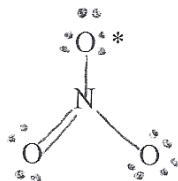
Name _____ Print Name _____

Please show work on all questions for partial credit even on questions which do not specify. (20 total pts)

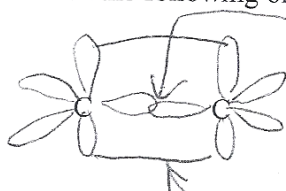
1. Give the electron configuration of S^{2-} (start from $1s^2, 2s^2, \dots$ etc) (5 pts)

Color

2. For the molecule shown, show work for your calculation of formal charge on the atom with the * (3 pts).



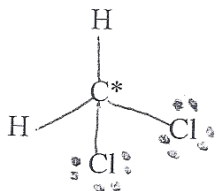
3. Given the following orbital diagram circle the correct bond. (4 pts, 2 pts each)



[(π) or (σ)] (circle one) bond

[(π) or (σ)] (circle one) bond

4. Given the following Lewis Dot structure, answer the following. (8 pts, one pt per letter)



Lewis Dot Structure

your 3D structure with dipole arrows

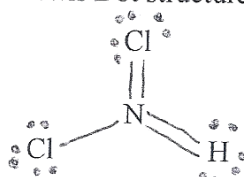
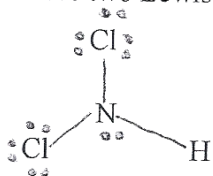
- Number of charge clouds on the atom with the * _____
- Number of lone pairs on the atom with the * _____
- Geometry of the molecule around the atom with the * _____
- bond angle _____
- Draw a 3 D structure of the molecule in the space above
- Draw ALL non zero dipole moment arrows in the figure that you drew.
- Is the molecule [(polar) of (non polar)] (circle one parenthesis)
- What is the predominant intermolecular force in the molecule ?
 [(London forces) or (dipole-dipole) or (Hydrogen bonding)] (circle one)

Name _____ Print Name _____

Please show work on all questions for partial credit even on questions which do not specify. (20 total pts)

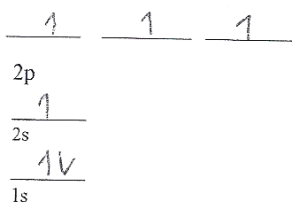
1. Given the following formula, complete the Electron Dot (Lewis Dot) structure: (6 pts)
 - a. Show your work for coming up with the valence electron count. NHCl_2 (3 pts)

- b. Given the two Lewis Dot structures, circle the correct Lewis Dot structure. (2 pt)

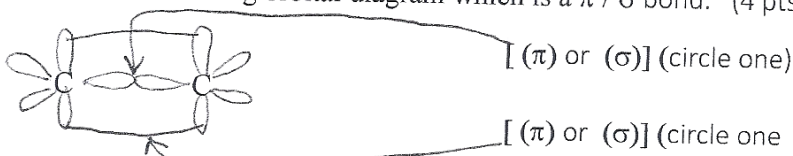


- c. Explain ONE reason why the one you did NOT choose is INCORRECT. (1 pt)

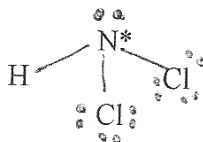
2. Given the valence orbital diagram for the element carbon (in the excited state), circle the orbitals used for the sp^2 hybridized electron orbital. (2 pts)



3. Given the following orbital diagram which is a π / σ bond. (4 pts, 2 pts each)



4. Given the following Lewis Dot structure, answer the following. (8 pts, one pt per letter)



Lewis Dot Structure

your 3D structure with dipole arrows

- a. Number of charge clouds on the atom with the * _____
- b. Number of lone pairs on the atom with the * _____
- c. Geometry of the molecule around the atom with the * _____
- d. bond angle _____
- e. Draw a 3 D structure of the molecule in the space above
- f. Draw ALL non zero dipole moment arrows in the figure that you drew.
- g. Is the molecule [(polar) of (non polar)] (circle one parenthesis)
- h. What is the predominant intermolecular force ? [(London forces) or (dipole-dipole) or (H bonding)] (circle one)

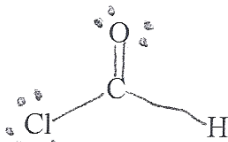
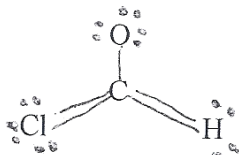
Name _____ Print Name _____

Please show work on all questions for partial credit even on questions which do not specify. (20 total pts)

1. Given the following formula, complete the Electron Dot (Lewis Dot) structure: (6 pts) *color*

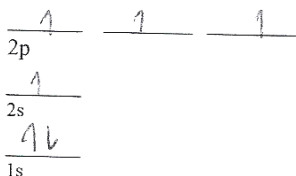
a. Show your work for coming up with the valence electron count. COHCl (3 pts)

b. Given the two Lewis Dot structures, circle the correct Lewis Dot structure. (2 pt)

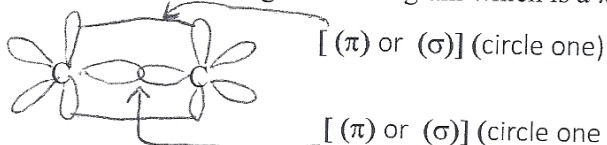


c. Explain ONE reason why the one you did NOT choose is INCORRECT. (1 pt)

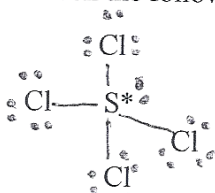
2. Given the valence orbital diagram for the element carbon (in the excited state), circle the orbitals used for the sp^2 hybridized electron orbital. (2 pts)



3. Given the following orbital diagram which is a π / σ bond. (4 pts, 2 pts each)



4. Given the following Lewis Dot structure, answer the following. (8 pts, one pt per letter)



Lewis Dot Structure

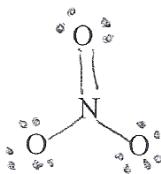
your 3D structure with dipole arrows

- Number of charge clouds on the atom with the * _____
- Number of lone pairs on the atom with the * _____
- Geometry of the molecule around the atom with the * _____
- bond angle _____
- Draw a 3 D structure of the molecule in the space above
- Draw ALL non zero dipole moment arrows in the figure that you drew.
- Is the molecule [(polar) of (non polar)] (circle one parenthesis)
- What is the predominant intermolecular force in the molecule ?
[(London forces) or (dipole-dipole) or (Hydrogen bonding)] (circle one)

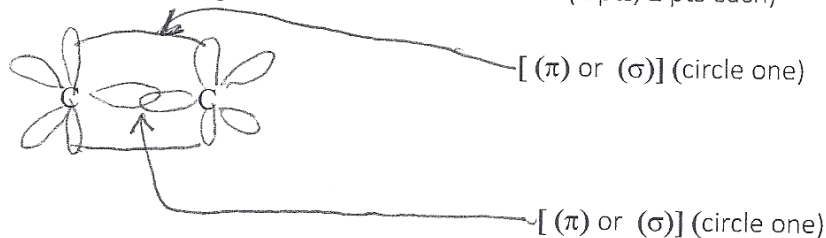
Name _____ Print Name _____

Please show work on all questions for partial credit even on questions which do not specify. (20 total pts)

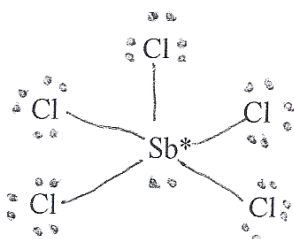
- Choose the larger by circling the larger. (6 pts, 2 pt each letter)
 - $[\text{Li}]$ vs $[\text{Li}^+]$ (circle one) $[\text{S}]$ vs $[\text{S}^{2-}]$ (circle one)
 - [(First Ionization Energy of K) vs (First Ionization Energy of Cs)] (circle one parenthesis)
 - [(Electronegativity of Cl) vs (electronegativity of B)] (circle one parenthesis)
- Draw at least one resonance structure for the given correct Lewis Dot structure. (2 pts)



- Given the following orbital diagram which is a π / σ bond. (4 pts, 2 pts each)



- Given the following Lewis Dot structure, answer the following. (8 pts, one pt per letter)



Lewis Dot Structure

your 3D structure with dipole arrows

- Number of charge clouds on the atom with the * _____
- Number of lone pairs on the atom with the * _____
- Geometry of the molecule around the atom with the * _____
- bond angle _____
- Draw a 3 D structure of the molecule in the space above
- Draw ALL non zero dipole moment arrows in the figure that you drew.
- Is the molecule [(polar) of (non polar)] (circle one parenthesis)
- What is the predominant intermolecular force in the molecule ?
 [(London forces) or (dipole-dipole) or (Hydrogen bonding)] (circle one)