Organic Chemistry II (CHEM 442) Fall 15 Dr. Hahn's Class MWF 12 noon Quiz I form A Exam # _____

Sign Name Key Print Name blue

Please show work on all questions for partial credit even on questions which do not specify. (25 pts)

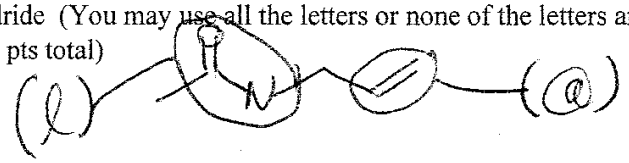
1a. For the element **In** show the ~~electron configuration~~ for all **valence** electrons ~~in the format $1s^2, 2s^2$, ...~~ etc (2 pts each letter, 6 pts total) Not valence -1 $5s^2, 5p^1$

b. For the same element, show the **valence** electron configuration orbital diagram in the format {↑↓ ↑ etc} using up and down arrows to represent electrons. (1s 2s) not valence -1

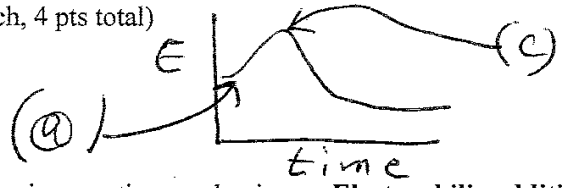
5s ↑↓ 5p ↑ ↑ —

c. For the same element, **how many valence** electrons is in the atom ? 3 (group = 3A)

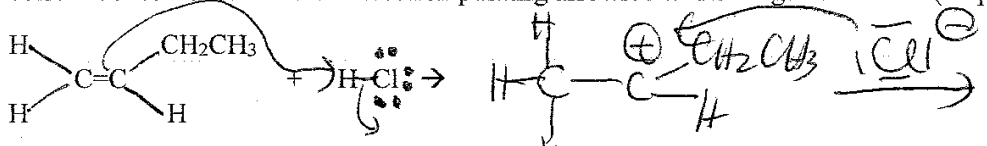
2. In the molecule below, match the functional group name from the list by filling in the parenthesis with one of the letters listed. (a) alkene (b) alkyne (c) arene (d) alkyl halide (e) alcohol (f) ether (g) amine (h) aldehyde (i) ketone (j) carboxylic acid (k) ester (l) amide (m) acid halide (n) acid anhydride (You may use all the letters or none of the letters and may use the same letter multiple times) (2 pts each, 4 pts total)



3. Label the following energy diagram with one of the matching letters. (a) reactant (b) product (c) transition state (d) intermediate (You may use all the letters or none of the letters and may use the same letter multiple times) (2 pts each, 4 pts total)

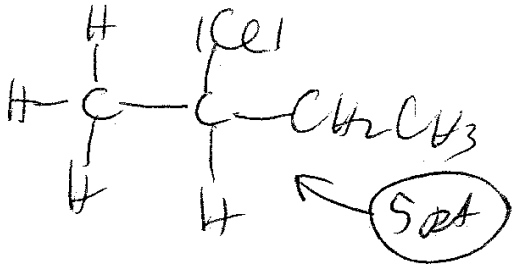


4. Complete the following reaction mechanism: **Electrophilic addition of H Cl to alkene**. Show correct Lewis Dot structures & electron pushing arrows. 3 D drawings not needed (11 pts)



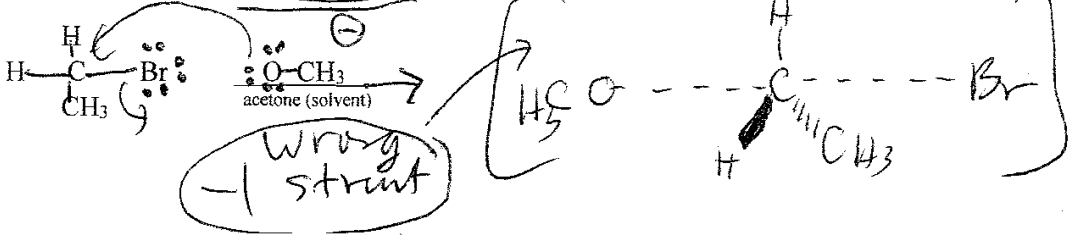
arrows ½ pts bad -1 really really bad -9

5pt.



5pt

Extra Credit: Give **the transition state of the S_N2** reaction mechanism for the reaction shown. (2 pts)



wrong structure -1

Organic Chemistry II (CHEM 442) Fall 15 Dr. Hahn's Class MWF 12 noon Quiz I form B Exam # _____

Sign Name Key Print Name _____

Please show work on all questions for partial credit even on questions which do not specify. (25 pts)

1a. For the element **Ge** show the electron configuration for all **valence** electrons in the format $1s^2$, $2s^2$, … etc ~~(2 pts each letter, 6 pts total)~~ not valence -1 $4s^2$, $4p^2$

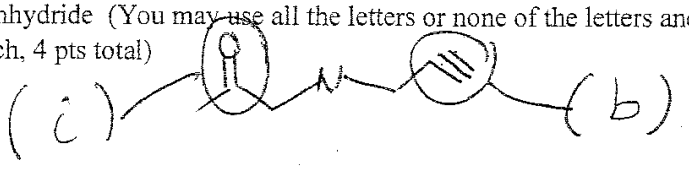
b. For the same element, show the **valence** electron configuration orbital diagram in the format: {↑↓ ↑ etc} using up and down arrows to ~~represent electrons~~.

1s 2s

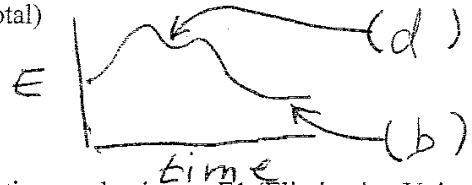
↑↓ 1 1 –
4s 4p

c. For the same element, **how many valence** ~~electrons is in the~~ atom ? 4 (group 4A)

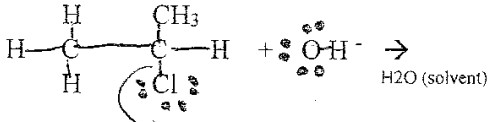
2. In the molecule below, match the functional group name from the list by filling in the parenthesis with one of the letters listed. (a) alkene (b) alkyne (c) arene (d) alkyl halide (e) alcohol (f) ether (g) amine (h) aldehyde (i) ketone (j) carboxylic acid (k) ester (l) amide (m) acid halide (n) acid anhydride (You may use all the letters or none of the letters and may use the same letter multiple times) (2 pts each, 4 pts total)



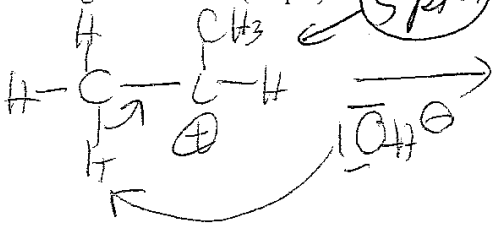
3. Label the following energy diagram with one of the matching letters. (a) reactant (b) product (c) transition state (d) intermediate (You may use all the letters or none of the letters and may use the same letter multiple times) (2 pts each, 4 pts total)



4. Complete the following reaction mechanism: E1 (Elimination Unimolecular) Show correct Lewis Dot structures & electron pushing arrows. 3 D drawings not needed (11 pts)



5pt



arrows ½ pt

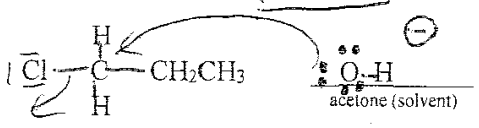
bad -1

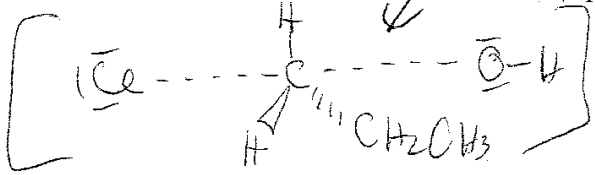
really really bad -9

5pt

wrong structure -1

Extra Credit: Give the transition state of the S_N2 reaction mechanism for the reaction shown. (2 pts)





Organic Chemistry II (CHEM 442) Fall 15 Dr. Hahn's Class MWF 12 noon Quiz I form A Exam # _____

Sign Name _____ Print Name _____ blue

Please show work on all questions for partial credit even on questions which do not specify. (25 pts)

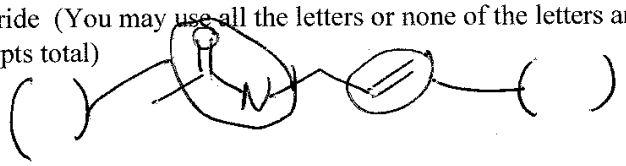
1a. For the element **In** show the electron configuration for all **valence** electrons in the format $1s^2$, $2s^2$, … etc (2 pts each letter, 6 pts total)

b. For the same element, show the **valence** electron configuration orbital diagram in the format: {↑↓ ↑ etc} using up and down arrows to represent electrons.

1s 2s

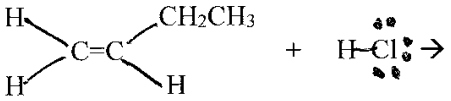
c. For the same element, **how many valence** electrons is in the atom ? _____

2. In the molecule below, match the functional group name from the list by filling in the parenthesis with one of the letters listed. (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 all the letters or none of the letters and may use the same letter multiple times) (2 pts each, 4 pts total)

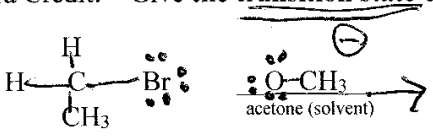


3. Label the following energy diagram with one of the matching letters. (a) reactant (b) product (c) transition state (d) intermediate (You may use all the letters or none of the letters and may use the same letter multiple times) (2 pts each, 4 pts total)

4. Complete the following reaction mechanism: **Electrophilic addition of H Cl to alkene**. Show correct Lewis Dot structures & electron pushing arrows. 3 D drawings not needed (11 pts)



Extra Credit: Give **the transition state of the SN2** reaction mechanism for the reaction shown. (2 pts)



Organic Chemistry II (CHEM 442) Fall 15 Dr. Hahn's Class MWF 12 noon Quiz I form B Exam # _____

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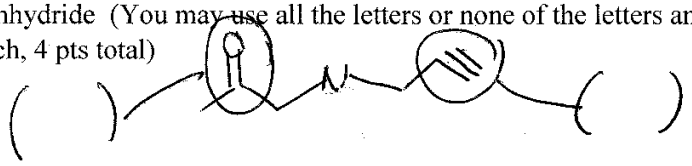
1a. For the element **Ge** show the electron configuration for all **valence** electrons in the format $1s^2$, $2s^2$, … etc (2 pts each letter, 6 pts total)

b. For the same element, show the **valence** electron configuration orbital diagram in the format: {__↑↓__ __↑__ etc} using up and down arrows to represent electrons.

1s 2s

c. For the same element, **how many valence** electrons is in the atom ? _____

2. In the molecule below, match the functional group name from the list by filling in the parenthesis with one of the letters listed. (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 all the letters or none of the letters and may use the same letter multiple times) (2 pts each, 4 pts total)



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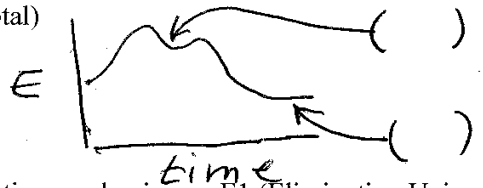
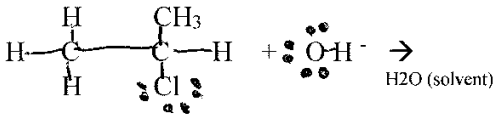


4. Complete the following reaction mechanism: E1 (Elimination Unimolecular) Show correct Lewis Dot structures & electron pushing arrows. 3 D drawings not needed (11 pts)



Extra Credit: Give the transition state of the S_N2 reaction mechanism for the reaction shown. (2 pts)