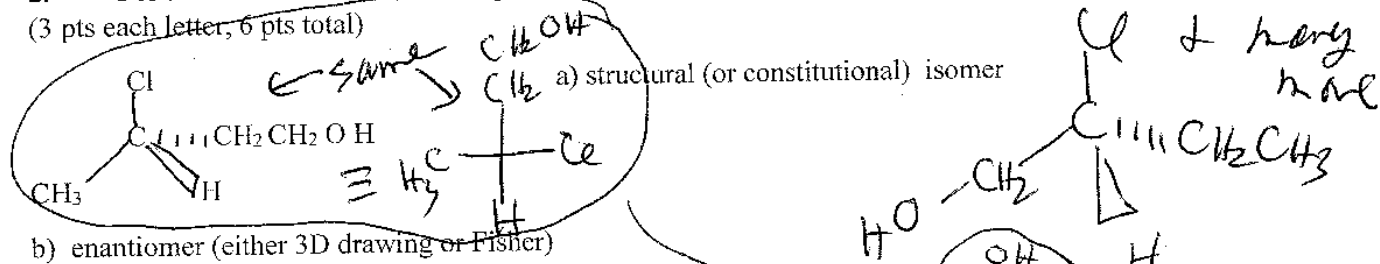Sign Name ___*Key*___ Print Name _____

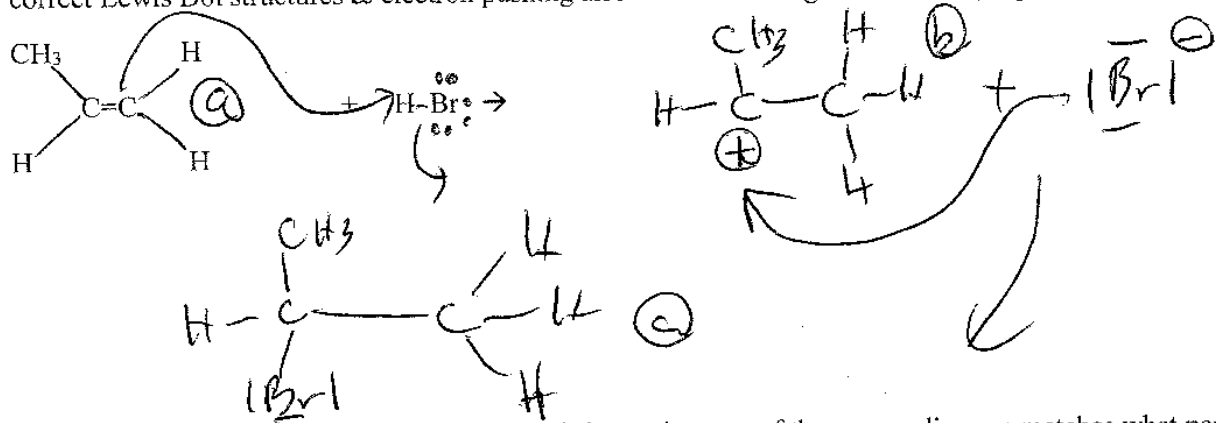Please show work on all questions for partial credit even on questions which do not specify. (25 pts) *White*

1a. For the element **Sn** show the electron configuration for all **valence** electrons in the format $1s^2, 2s^2$, ... etc (3 pts each letter, 6 pts total) $5s^2, \quad 5p^2$

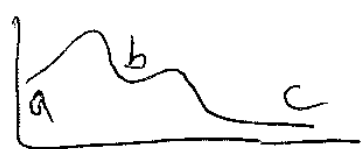b. For the same element, **how many valence** electrons is in the atom ? ___4___

2. For the molecule below, make up one example of the following type of isomer and draw it in the space (3 pts each letter, 6 pts total)

a) structural (or constitutional) isomer

Cl
C\|\|\|$CH_2 CH_2 O H$
CH_3 H

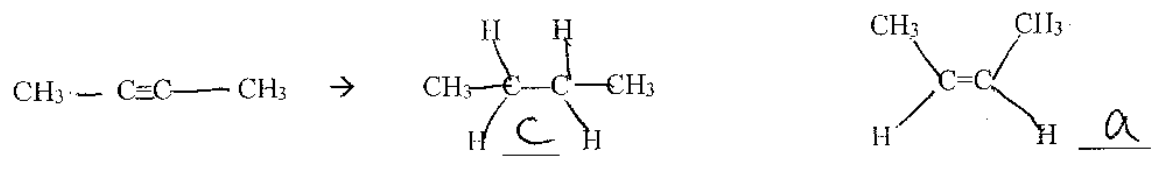b) enantiomer (either 3D drawing or Fisher)

2. a. Complete the following reaction mechanism: Electrophilic Addition of H Br to alkene. S_N1 Show correct Lewis Dot structures & electron pushing arrows. 3 D drawings not needed (13 pts total, 9 pts)

CH_3 H
C=C   (a)   + H-Br →
H   H

b. Draw the matching energy diagram and show what part of the energy diagram matches what part of the mechanism. (4 pts)

Extra Credit: (2 pts) There are 3 ways to do a hydrogenation reaction on an alkyne, match the stuff over the arrow with the correct product by filling in the blank. (a) Lindlar's catalyst (b) Li^0 / NH_3 (c) Pt / H_2

$CH_3 — C≡C — CH_3$ → $CH_3—C—C—CH_3$ (b) C

CH_3 CH_3
C=C
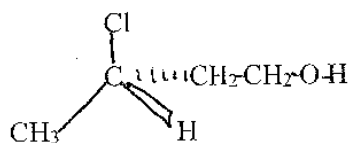H   H   *a*

Sign Name ___*Kay*___ Print Name _____

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

1a. For the element **Se** show the electron configuration for all **valence** electrons in the format $1s^2, 2s^2,$
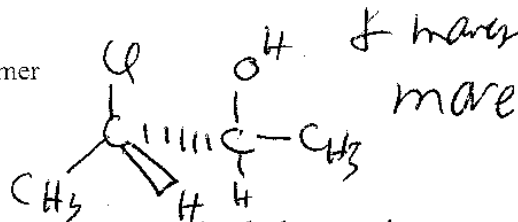... etc (3 pts each letter, 6 pts total) $4s^2, 4p^4$
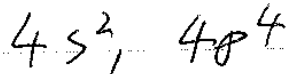
b. For the same element, **how many valence** electrons is in the atom ? ___6___

2. For the molecule below, make up one example of the following type of isomer and draw it in the space
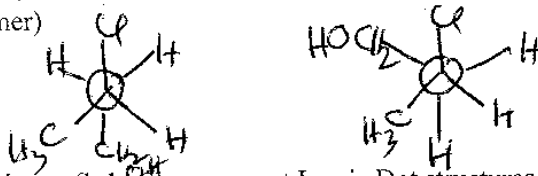(3 pts each letter, 6 pts total)

a) structural (or constitutional) isomer   + many more

Cl
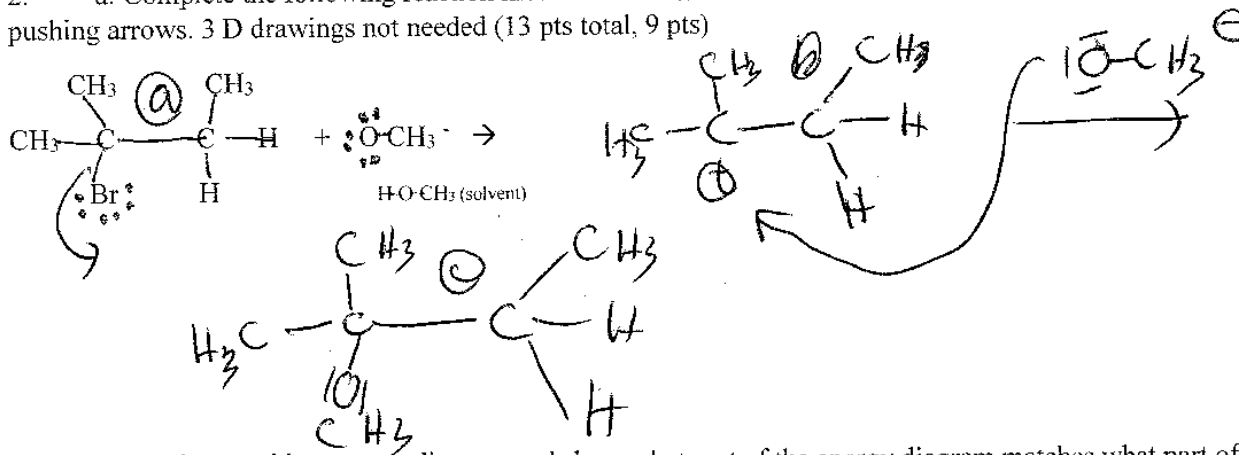CιιιιCH_2-CH_2-O-H
CH_3 H

c) conformation isomer (need Newman projection) (should draw a pair, the above molecule does not show
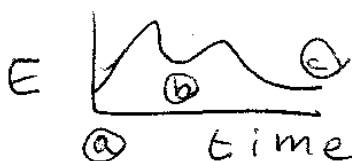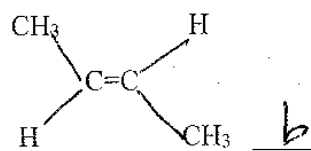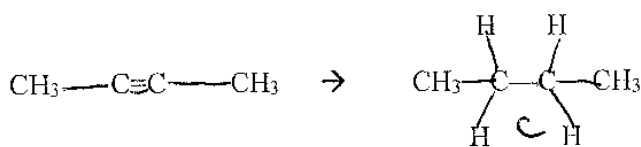enough information to show a conformational isomer)

+ many more

2. a. Complete the following reaction mechanism: S_N1 Show correct Lewis Dot structures & electron
pushing arrows. 3 D drawings not needed (13 pts total, 9 pts)

CH_3 (a) CH_3
CH_3-C-----C-H + :O-CH_3 →
:Br: H
H-O-CH$_3$ (solvent)

b. Draw the matching energy diagram and show what part of the energy diagram matches what part of the
mechanism. (4 pts)

E   time

Extra Credit: (2 pts) There are 3 ways to do a hydrogenation reaction on an alkyne, match the stuff over the
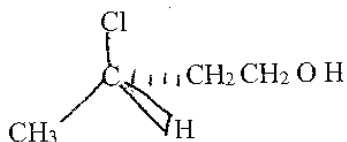arrow with the correct product by filling in the blank.   (a) Lindlar's catalyst   (b) Li° / NH$_3$ (c) Pt / H$_2$

CH_3-----C≡C-----CH_3 → CH_3-C-C-CH_3 c
H H   H H

CH_3 H
$C=C$
H CH_3 *b*

Sign Name _____ Print Name _____

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

1a. For the element **Sn** show the electron configuration for all **valence** electrons in the format $1s^2$, $2s^2$, ... etc (3 pts each letter, 6 pts total)

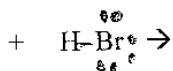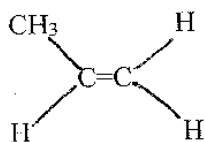b. For the same element, **how many valence** electrons is in the atom ? _____

2. For the molecule below, make up one example of the following type of isomer and draw it in the space (3 pts each letter, 6 pts total)

Cl
|
C·ııı CH₂ CH₂ O H
/   \
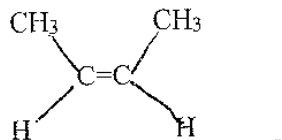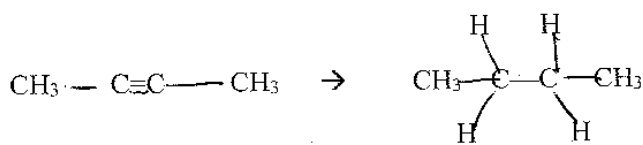CH₃   H

a) structural (or constitutional) isomer

b) enantiomer (either 3D drawing or Fisher)

2. a. Complete the following reaction mechanism: Electrophilic Addition of H Br to alkene. S_N1 Show correct Lewis Dot structures & electron pushing arrows. 3 D drawings not needed (13 pts total, 9 pts)

CH₃   H
  \   /
   C=C
  /   \
 H   H

+   H–Br →

b. Draw the matching energy diagram and show what part of the energy diagram matches what part of the mechanism. (4 pts)

Extra Credit: (2 pts) There are 3 ways to do a hydrogenation reaction on an alkyne, match the stuff over the arrow with the correct product by filling in the blank. (a) Lindlar's catalyst (b) Li° / NH₃ (c) Pt / H₂

CH₃ — C≡C —— CH₃ → CH₃–C–C–CH₃   CH₃   CH₃
                        | | \   /
                        H H   C=C
                        H H   _____   /   \
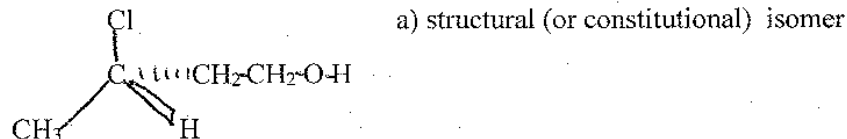   H   H _____

Sign Name _____ Print Name _____

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

1a.   For the element **Se**   show the electron configuration for all **valence** electrons in the format $1s^2, 2s^2,$ ... etc (3 pts each letter, 6 pts total)
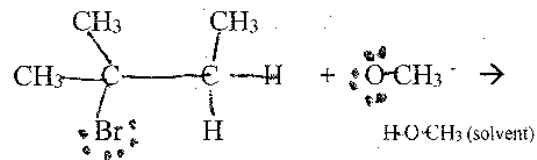
b.   For the same element, **how many valence** electrons is in the atom ? _____

2.   For the molecule below, make up one example of the following type of isomer and draw it in the space (3 pts each letter, 6 pts total)

Cl
|
C\\\\\\CH₂-CH₂-O-H   a) structural (or constitutional) isomer
/   \\
CH₃   H

c) conformation isomer (need Newman projection) (should draw a pair, the above molecule does not show enough information to show a conformational isomer)

2.   a. Complete the following reaction mechanism: S_N1 Show correct Lewis Dot structures & electron pushing arrows. 3 D drawings not needed (13 pts total, 9 pts)

CH₃   CH₃
  \ |
CH₃—C———C —H   + :O-CH₃ ⁻ →
  / |
 •Br: H
              H-O-CH₃ (solvent)

b.   Draw the matching energy diagram and show what part of the energy diagram matches what part of the mechanism. (4 pts)

Extra Credit: (2 pts) There are 3 ways to do a hydrogenation reaction on an alkyne, match the stuff over the arrow with the correct product by filling in the blank.   (a) Lindlar's catalyst   (b) Li° / NH₃   (c) Pt / H₂

CH₃——C≡C——CH₃ →

H H
 \ |
CH₃—C—C—CH₃
 / |
H   H ___

CH₃   H
  \   /
   C=C
  /   \
 H   CH₃ ___