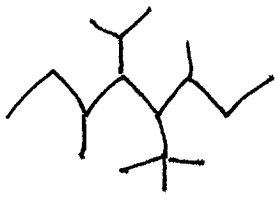
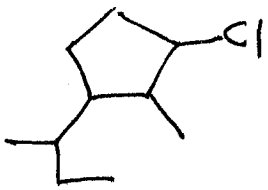
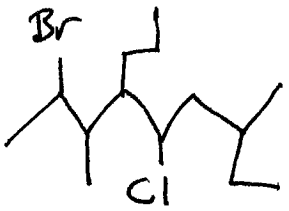
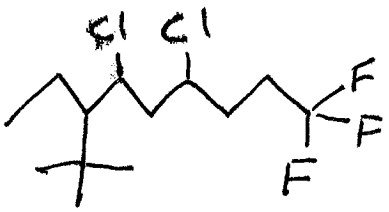
Friday, April 20th, 2007 Name: _____
Exam #1

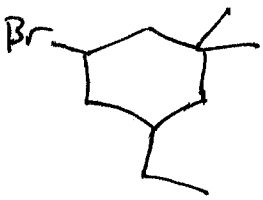
1. Name the following molecules:

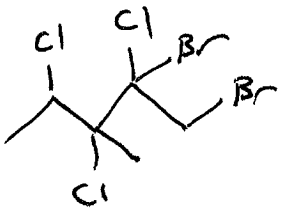




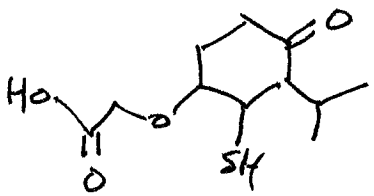


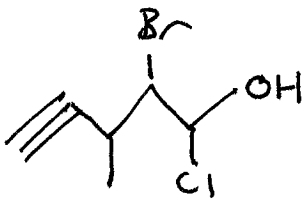


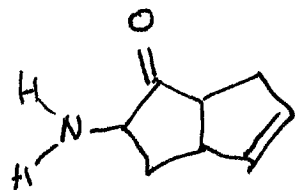


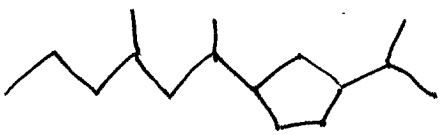


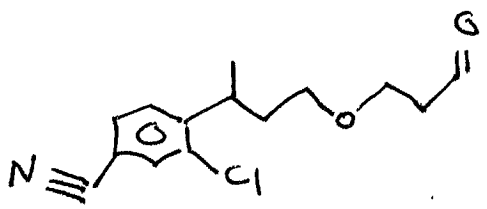
2. For each of the following molecules…
   (a) Identify all functional groups present.
   (b) Give the formula.







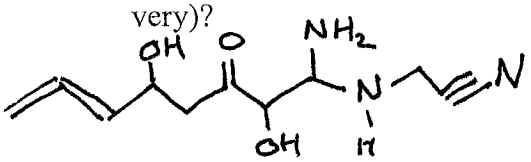




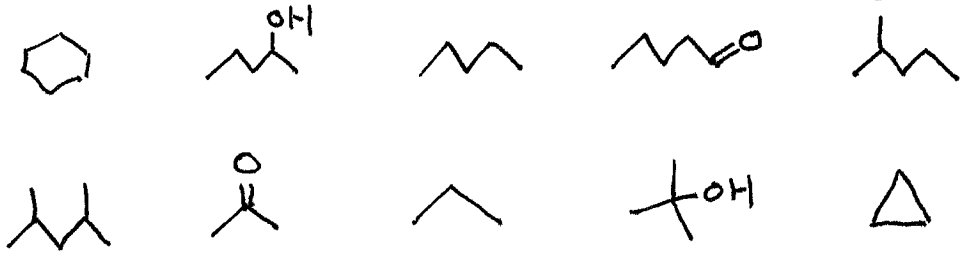
3. Show all the ether isomers with the formula $C_4H_{10}O$.

4. Show all the ketone isomers with the formula $C_6H_{12}O$.

5. Examine the molecule below:
   (a) Identify the hybridization on each carbon
   (b) How many pi bonds are present?
   (c) How many sigma bonds are present?
   (d) How many polar bonds are present?
   (e) Do you expect this molecule to be acidic, basic, or neither?
   (f) How viscous do you expect this molecule to be (not much, somewhat, or very)?



6. Rank the following according to melting point, giving a 1 to the highest.

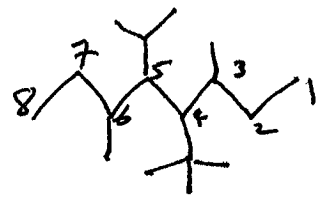


7. What is surface tension? Briefly explain what causes it.

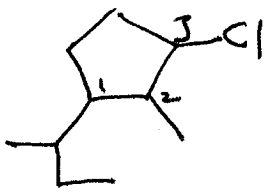
Friday, April 20th, 2007
Exam #1

Name: Key

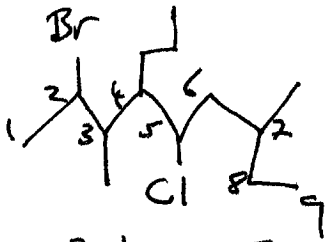
1. Name the following molecules:



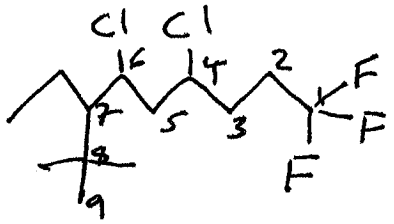
4-tert-butyl-5-isopropyl-3,6-dimethyl octane



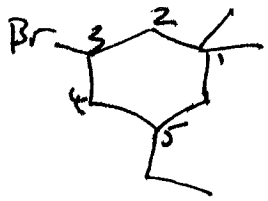
1-sec-butyl-3-chloro-2-methyl cyclopentane



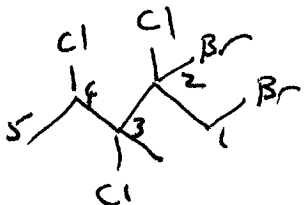
2-bromo-5-chloro-3,7-dimethyl-4-propyl nonane



4,6-dichloro-7-ethyl-1,1,1-trifluoro-8,8-dimethyl nonane

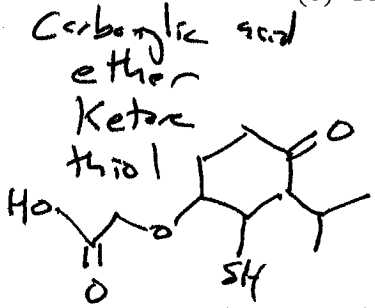


3-bromo-5-ethyl-1,1-dimethyl cyclohexane

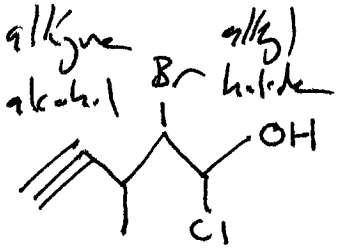


1,2-dibromo-3,3,4-trichloro-3-methyl pentane

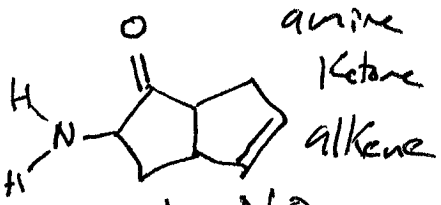
2. For each of the following molecules…
   (a) Identify all functional groups present.
   (b) Give the formula.



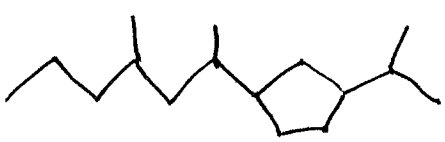
$C_{11}H_{18}O_4S$



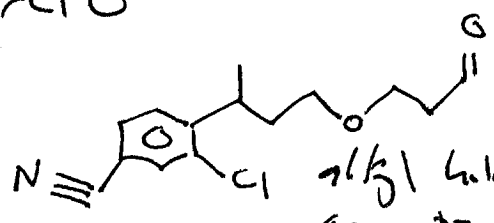
C_6H_8BrClO



$C_8H_{11}NO$



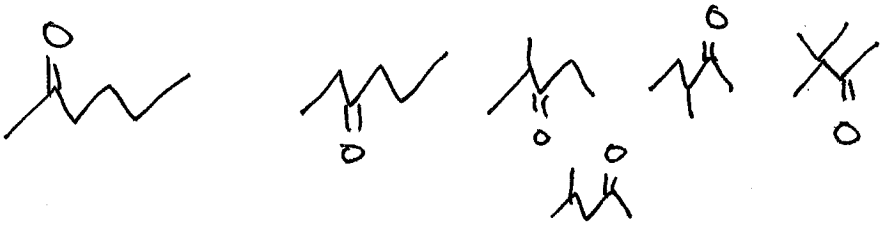
Alkane $C_{16}H_{32}$



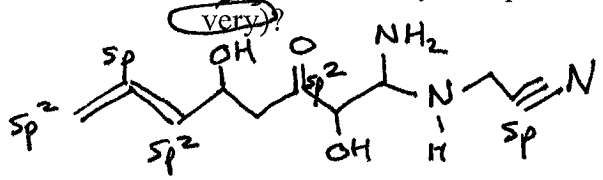
$C_4H_{16}ClNO_2$

3. Show all the ether isomers with the formula $C_4H_{10}O$. (3)

4. Show all the ketone isomers with the formula $C_6H_{12}O$. (6)

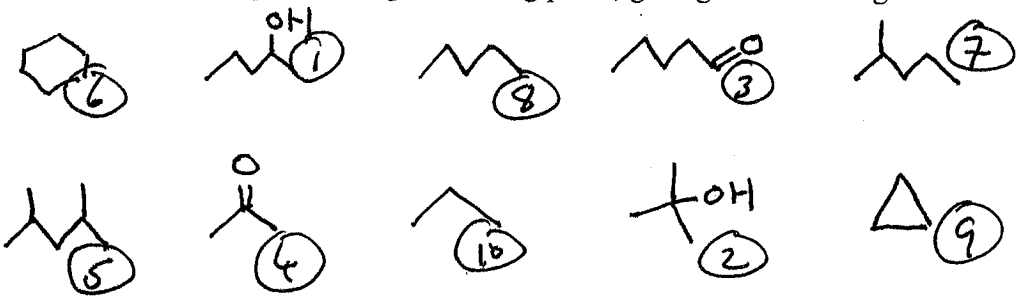


5. Examine the molecule below:
   (a) Identify the hybridization on each carbon
   (b) How many pi bonds are present? 5
   (c) How many sigma bonds are present? 20 shown (technically 29)
   (d) How many polar bonds are present? 12
   (e) Do you expect this molecule to be acidic, basic, or neither?
   (f) How viscous do you expect this molecule to be (not much, somewhat, or very)?



all others are sp^3

6. Rank the following according to melting point, giving a 1 to the highest.

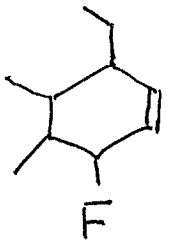


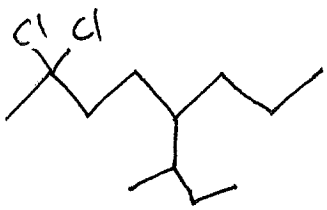
7. What is surface tension? Briefly explain what causes it.

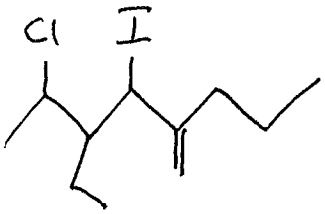
Top layers of a liquid are pulled by IMF together to form a denser layer on top that acts like a surface "skin" able to support light objects and requiring energy to penetrate.

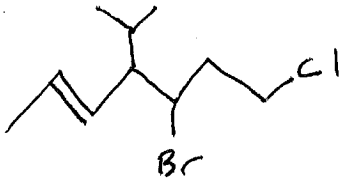
Tuesday, Oct. 13th, 2009 Name: _____
Exam #1

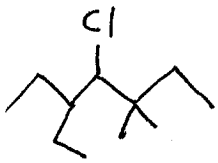
1. Name the following molecules:



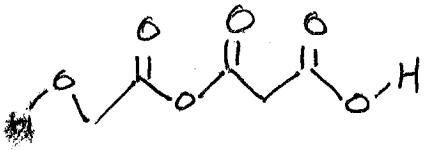


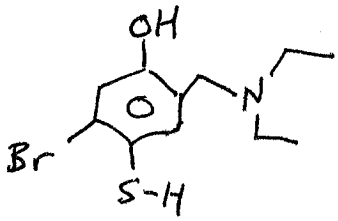


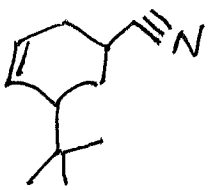


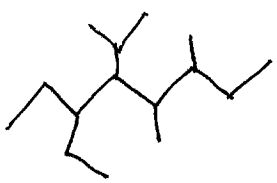


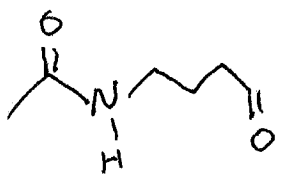
2. For each of the following molecules:
   (a) Identify all functional groups present.
   (b) Give the formula







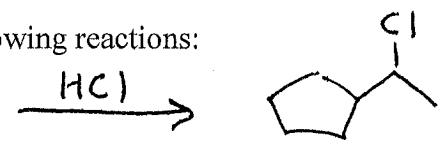


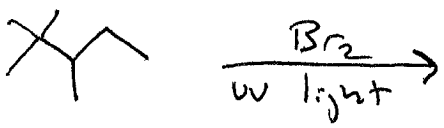


3. Give all the alkene isomers with the formula C_5H_{10}.

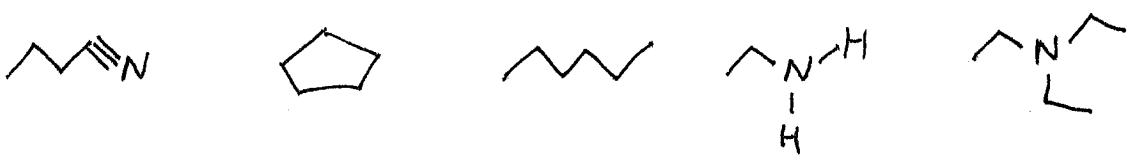
4. Give all the carboxylic acid isomers with the formula $C_6H_{12}O_2$.

5. Complete the following reactions:

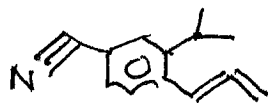




6. Rank according to boiling point, giving a 1 to the highest.



7. Identify the hybridization on each carbon in the following molecule:



8. Define the following:
   (a) Elimination Reaction

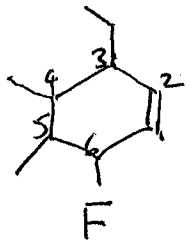
   (b) Mechanism

   (c) Radical

Tuesday, Oct. 13th, 2009
Exam #1

Name: Key

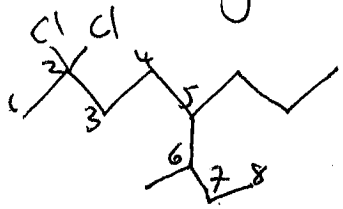
1. Name the following molecules:

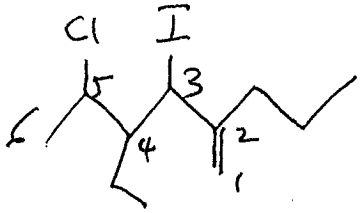


F

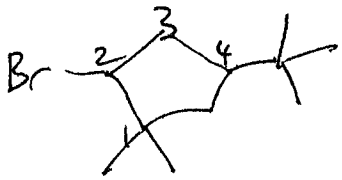
3-ethyl-6-fluoro-4,5-dimethyl cyclohexene

2,2-dichloro-6-methyl-5-propyl octane

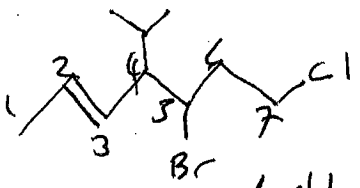




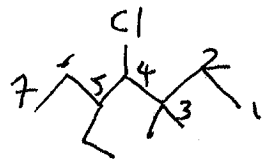
5-chloro-4-ethyl-3-iodo-2-propyl-1-hexene



2-bromo-4-tert-butyl-1,1-dimethyl cyclopentane

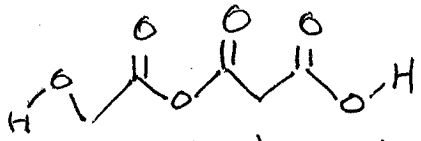


4-chloro-5-ethyl-3,3-dimethyl heptane



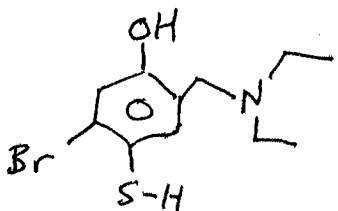
trans-5-bromo-7-chloro-4-isopropyl-2-heptene

2. For each of the following molecules:
   (a) Identify all functional groups present.
   (b) Give the formula



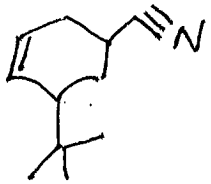
Carboxylic acid
Alcohol

$C_5H_6O_6$



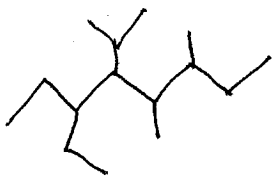
phenol
amine
alkyl halide
thiol

$C_{11}H_{16}BrNOS$



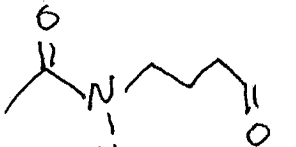
alkene

$C_{11}H_{17}N$



Alkane

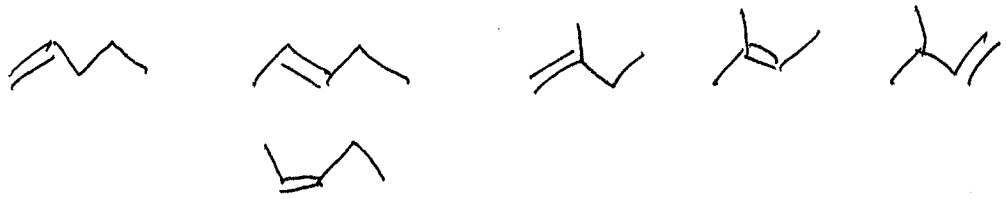
$C_{15}H_{32}$



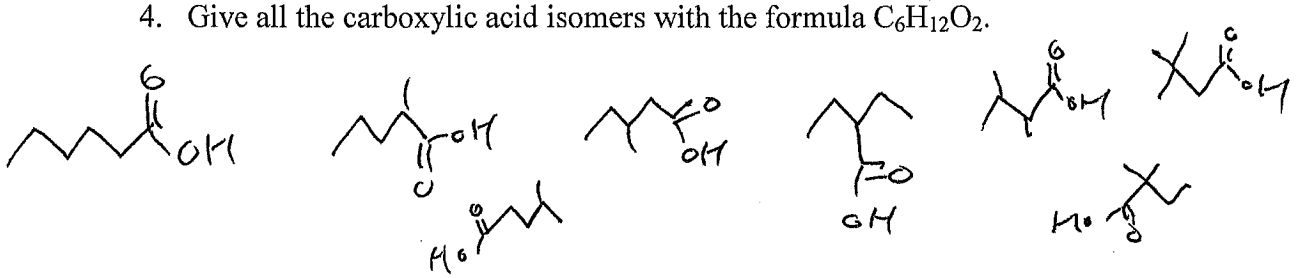
amide aldehyde

$C_6H_{11}NO_2$

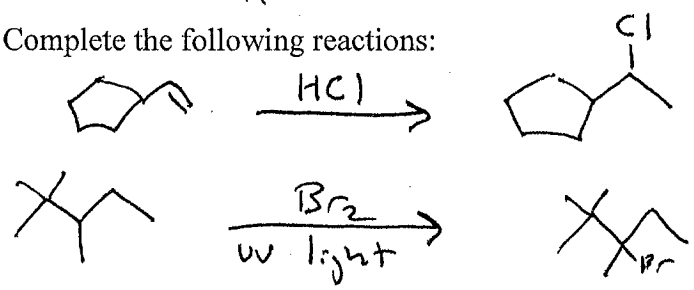
3. Give all the alkene isomers with the formula C_5H_{10}.



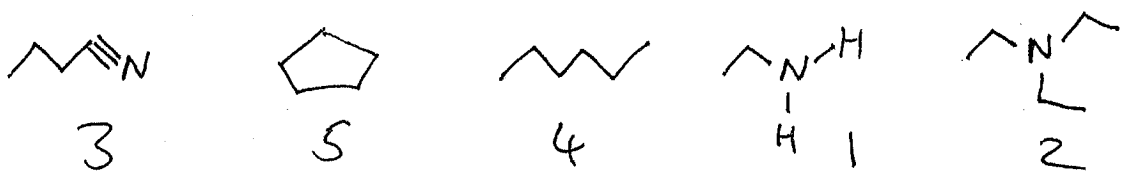
4. Give all the carboxylic acid isomers with the formula $C_6H_{12}O_2$.



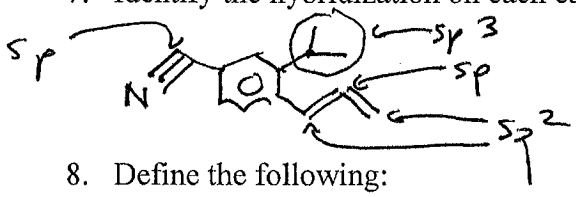
5. Complete the following reactions:



6. Rank according to boiling point, giving a 1 to the highest.



7. Identify the hybridization on each carbon in the following molecule:



All ⬡ are sp^2

8. Define the following:

(a) Elimination Reaction

More products than reactants (usually 1→2). π bond created.

(b) Mechanism

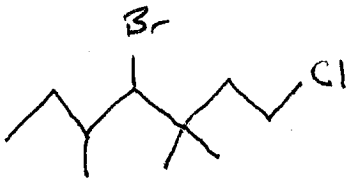
Step by step breakdown of how a rxn occurs.

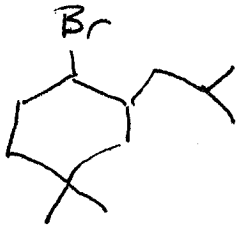
(c) Radical

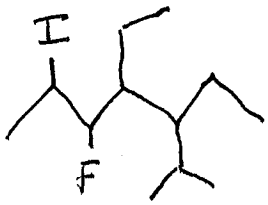
Unpaired electron.

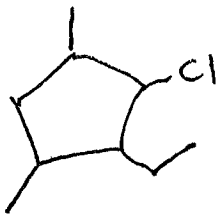
Wednesday, April 18th, 2012 Name: _____
Exam #1

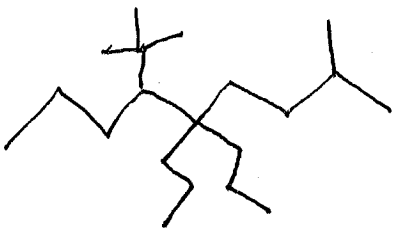
1. Name the following molecules:

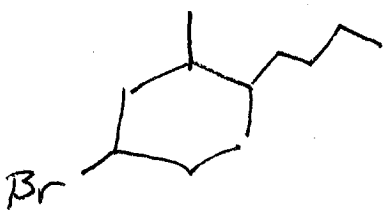




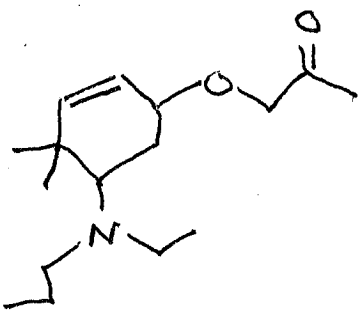


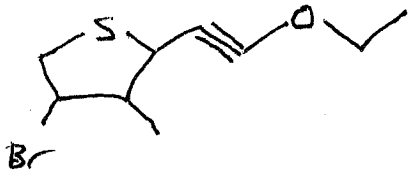


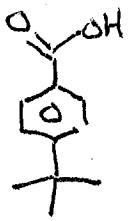


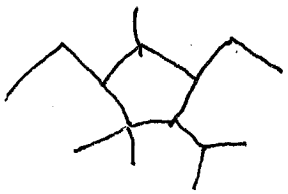


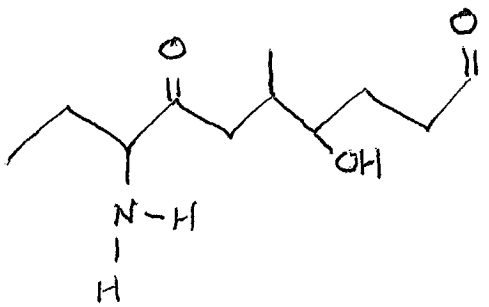
2. For the molecules below…
   (a) What is the formula?
   (b) Which functional groups are present?









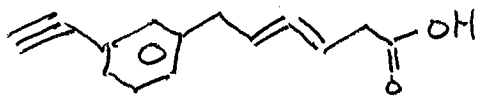


3. Show all ketones with the formula $C_6H_{12}O$.

4. Show all alcohols with the formula $C_5H_{12}O$.

5. 2-ethyl-1,1-dimethyl cyclopentane is treated with Br_2 and uv light. What is the name of the product?

6. For the molecule below...
   (a) Identify the hybridization on each carbon.
   (b) How many pi bonds are present?

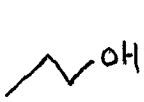


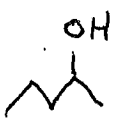
7. Fill in the blanks below.
   (a) A _____ mechanism is one where electron pairs rearrange to form a more stable product.
   (b) The type of reaction where pi bonds are typically lost is called _____.
   (c) A carbon-oxygen double bond is called _____.
   (d) The _____ functional group is the only one that is appreciably basic.
   (e) Cis-trans isomers are called _____ isomers.
   (f) Alkyl halides or _____ molecules are often colored.

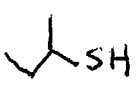
8. The molecules below have been numbered 1-5. For each question below rank these molecule by listing what order they would go in from left to right, with the HIGHEST being first, and the lowest last.
   (a) Melting point:

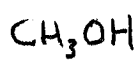
   (b) Water solubility:

   (c) Vapor Pressure:

1. 

2.
3. 

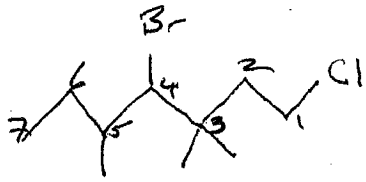
4. 

5. 

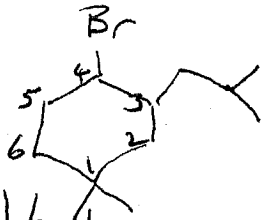
Wednesday, April 18th, 2012
Exam #1

Name: Key

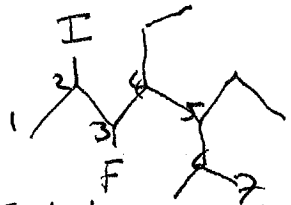
1. Name the following molecules:



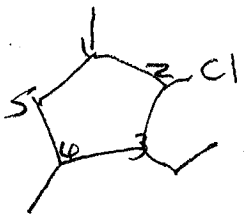
4-bromo-1-chloro-3,3,5-trimethyl heptane



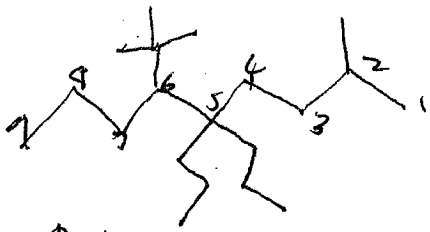
4-bromo-3-isobutyl-1,1-dimethyl cyclohexane



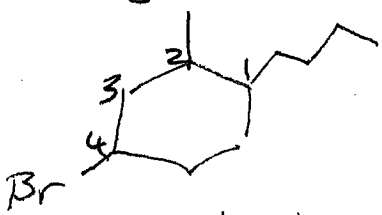
4,5-diethyl-3-fluoro-2-iodo-6-methyl heptane



2-chloro-3-ethyl-1,4-dimethyl cyclopentane

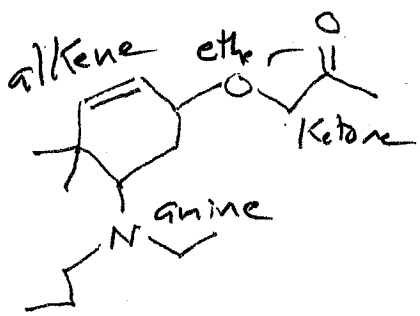


6-tert-butyl-2-methyl-5,5-dipropyl nonane

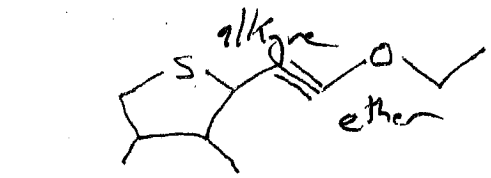


4-bromo-1-butyl-2-methyl cycloheptane

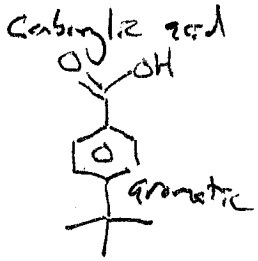
2. For the molecules below…
   (a) What is the formula?
   (b) Which functional groups are present?



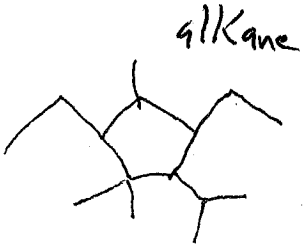
$C_{16}H_{29}NO_2$



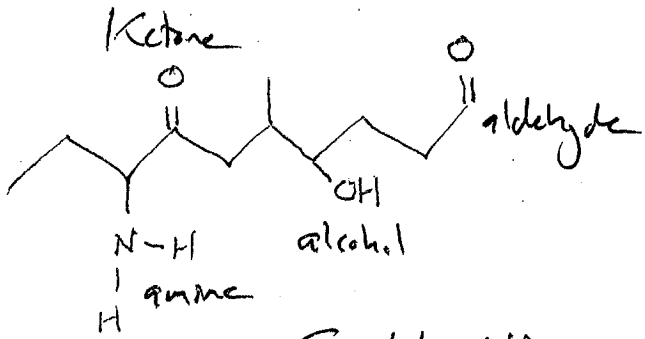
$C_9H_{13}BrOS$



$C_{11}H_{14}O_2$

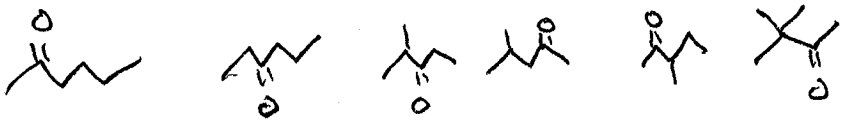


$C_{15}H_{30}$

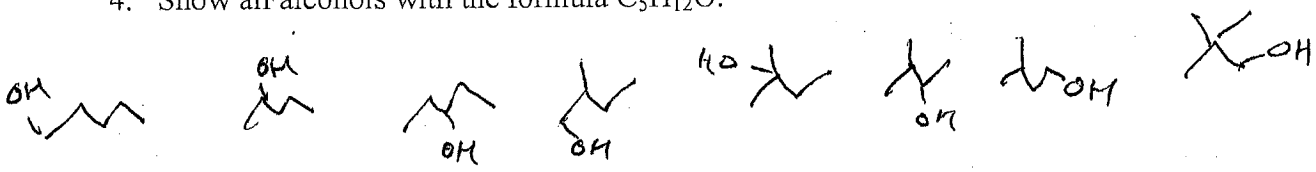


$C_{11}H_{21}NO_3$

3. Show all ketones with the formula $C_6H_{12}O$.

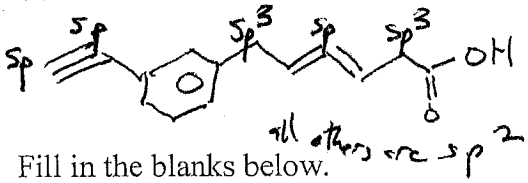


4. Show all alcohols with the formula $C_5H_{12}O$.



5. 2-ethyl-1,1-dimethyl cyclopentane is treated with Br_2 and uv light. What is the name of the product? 1-bromo-1-ethyl-2,2-dimethyl cyclopentane

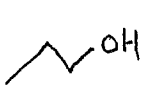
6. For the molecule below...
   (a) Identify the hybridization on each carbon.
   (b) How many pi bonds are present?



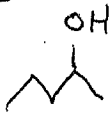
8 π bonds

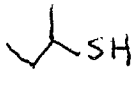
7. Fill in the blanks below.
   (a) A pericyclic mechanism is one where electron pairs rearrange to form a more stable product.
   (b) The type of reaction where pi bonds are typically lost is called addition.
   (c) A carbon-oxygen double bond is called carbonyl.
   (d) The amine functional group is the only one that is appreciably basic.
   (e) Cis-trans isomers are called geometric isomers.
   (f) Alkyl halides or conjugated molecules are often colored.

8. The molecules below have been numbered 1-5. For each question below rank these molecule by listing what order they would go in from left to right, with the HIGHEST being first, and the lowest last.
   (a) Melting point: 3 1 5 4 2
   (b) Water solubility: 5 1 3 4 2
   (c) Vapor Pressure: 2 4 5 1 3

1. 

2.

3. 

4. 

5. CH_3OH