Name: _____

Organic Chemistry Primer – Chapter 10

In addition to the questions below please attempt these from the book: 10.9, 10.15, 10.17, 10.20, 10.24, 10.25 a-c, 10.26, 10.30, 10.32, 10.36, 10.50

1. Compare and contrast the properties of organic and inorganic compounds.

   Please see Table 10.1 on page 309. Understand what properties lead to these differences – bonding mainly as organic compounds are bonded covalently.

2. Sketch the formula for Taxol (I know, it is quite the molecule, but you need to be able to draw these effectively).

   This molecule is on page 310 – you should become accustomed to drawing these sorts of structures quickly and neatly. This is a skill that will become important very soon. Understand that where lines meet, or end, indicates a carbon – unless otherwise stated.

3. Name 3 synthetic drugs. Where would you find these in nature?

   Lasix, Viagra, Enovid, many, many others – all of which are not found in nature.

4. List the 5 basic rules of drawing an organic molecule.

   These are listed on page 312 – know them cold.

5. List (and draw the chemical group) the six common functional groups.

Table 10.3 – know these. (also see PPT for others)

TABLE 10.3 Six Common Functional Groups

Family	Functional Group	Example	Name
Alcohol	—OH	CH_3CH_2OH	Ethanol
Amine	—NH_2	$CH_3CH_2NH_2$	Ethanamine
Aldehyde	—C(=O)—H	CH_3CH(=O)	Ethanal
Ketone	—C(=O)—	CH_3CCH_3(=O)	Acetone
Carboxylic acid	—C(=O)—OH	CH_3COH(=O)	Acetic acid
Ester	—C(=O)—OR	$CH_3COCH_2CH_3$(=O)	Ethyl acetate

Book problems

10.9 NO - same formula

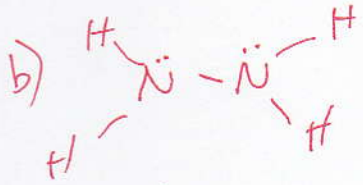
10.15

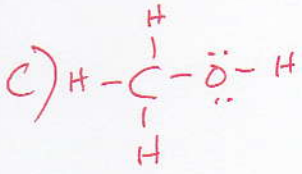
a) $\cdot\dot{C}\cdot$ (4) c) $\cdot\ddot{N}\cdot$ (5)

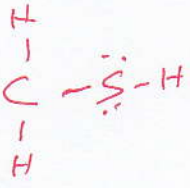
b) $\cdot\ddot{O}\cdot$ (6) d) $\cdot\ddot{F}:$ (7)

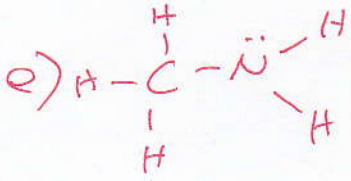
10.17

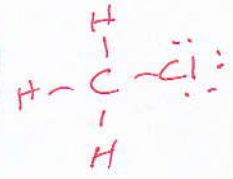
a) $H-\ddot{O}-\ddot{O}-H$

b) 

c) 

d) 

e) 

f) 

10.20

a) C forms 4 bonds - not 5.

b) same reason

10.24

a) ~109.5° (sp^3)

b) ~120° (sp^2)

c) 180° (sp)

10.25

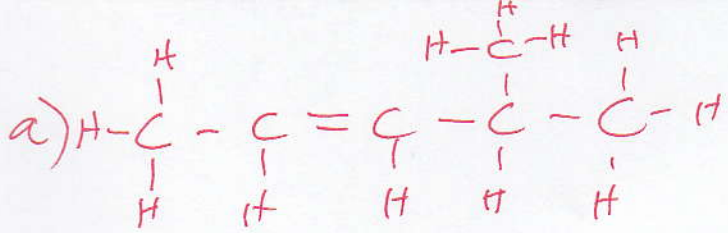
a) C = 120°
O = 109.5°

b) ~109.5°

c) ~120° (bent)

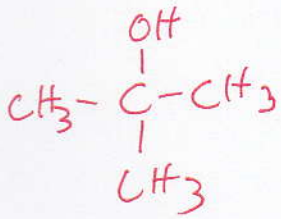
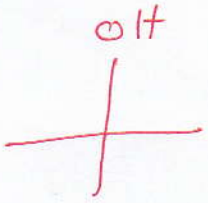
10.26 T, T, F, T, T, T, F, F, F, F

10.30

a) 

And so on

10.32

 or 

10.36

a) 

b) 

c) 

d) 

e) 

f) 

10.50

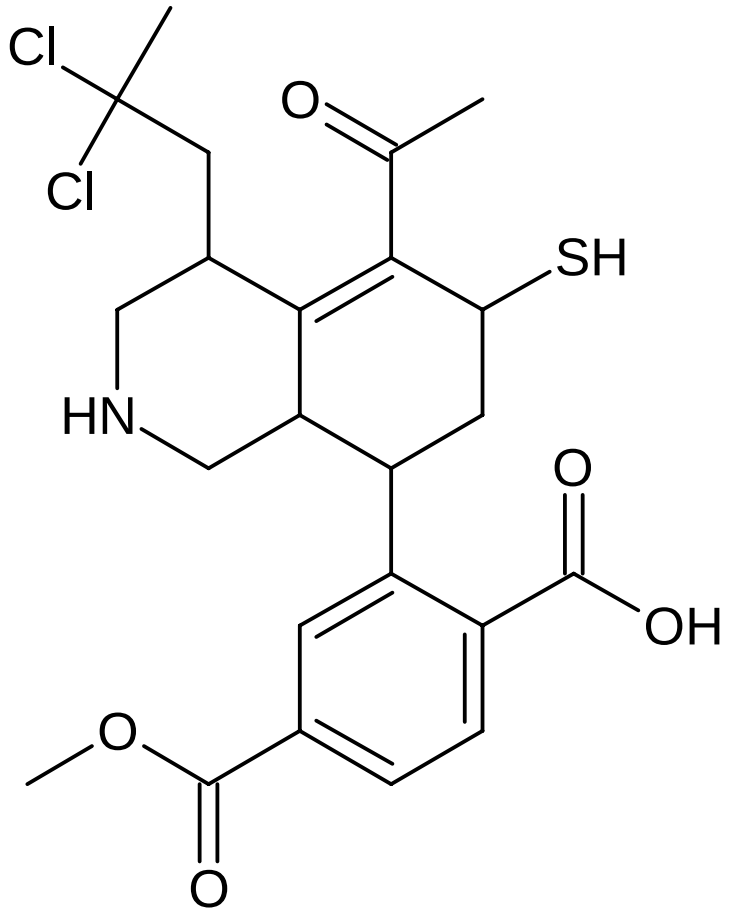
a) ketone

b) Carboxylic Acid

c) " " , Amine

d) ketone , Alcohol

Please calculate the MW of this molecule – C and H first then alphabetical order after for each element. Identify the functional groups and classes of compounds. Identify the number of sp^3, sp^2, and sp carbons in the structure. How many primary amines are there? How many lone pairs of electrons are there in this molecule (the answer is not zero)? How many carbonyl groups are there? Are any groups missing that you are supposed to know for the quiz?



Large Molecule

M.F.: $C_{23}H_{27}Cl_2NO_5S$

MW: 500.4 g/mol

Functional groups/classes:
- haloalkane
- Alkane
- Alkene
- Arene
- Caboxylic Acid
- Ester
- mercaptan
- 2° Amine (Ø primary)
- Ketone

sp^3 - 12

sp^2 - 11

sp - Ø

Lone pairs: 10

C=O: 3

Groups missing? Yes: alkyne, Alcohol, amide, ether.