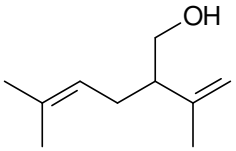
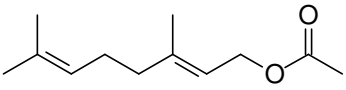
PROBLEMS AND EXERCISES OF LECTURE:
FUNCTIONAL GROUPS IN ORGANIC COMPOUNDS

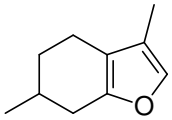
1) Identify the functional group in the following compounds and give them the correct name



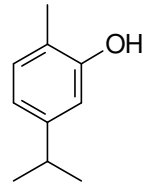
Lavandulol
of Lavanda perfume



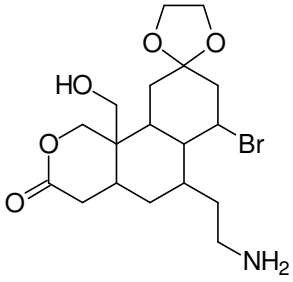
Geranyl acetate of
fruity rose aroma

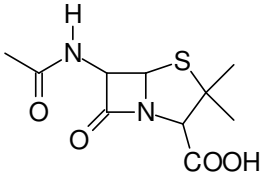


potent inhibitor of
liver detoxification
mechanisms

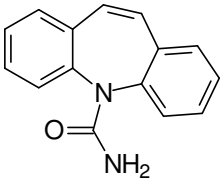


Carvacrol from
Oreganum aroma

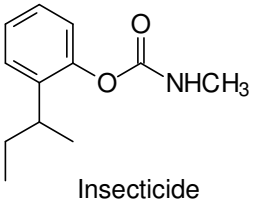




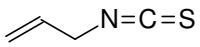
Penicillin
the first industrial
antibiotic (1942)



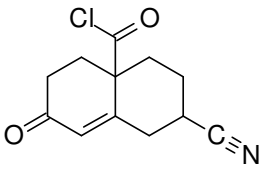
Carbamazepine
an anticonvulsant



Insecticide

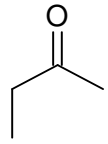


Bioactive component
of indian mustard oil

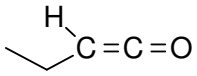


Synthesis
intermediate

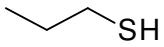
2) Draw a line between the functional group at left with its proper name at right



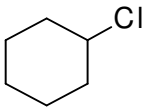
LACTAM



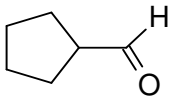
ALKYL HALIDE



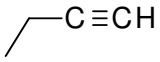
ALKENE



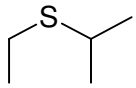
KETONE



MERCAPTAN

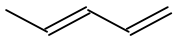


ESTER

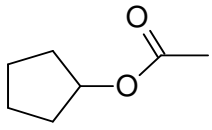


ALKYNE

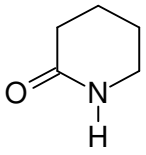
SULFIDE



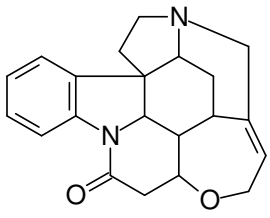
KETENE



ALDEHYDE

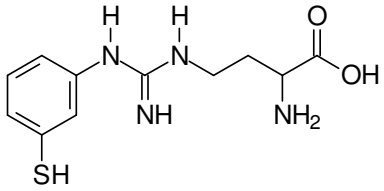


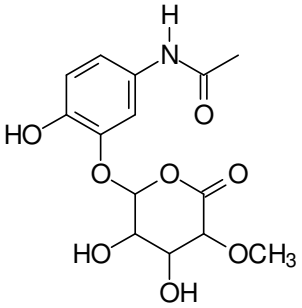
3) Compounds frequently possess more than one functional group. Identify with a name those in the following compounds.



Strychnine

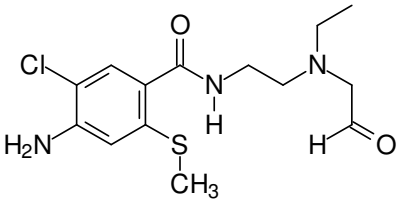
a poisonous alkaloid





A paracetamol derivative

analgesic



A metochlopramide derivative

antiemetic

4) Draw in line form any structure you wish to portray that includes the functional group(s) indicated below:

a) A carboxylic ester
b) A ketone and two alkenyl groups
c) A thioether and an alkyl chloride
d) A methyl carbamate
e) An aromatic aldehyde
f) An aryl ring with two ether groups as substituents
g) An alkyne also containing an ester function

5) In general terms, which compound in the following pairs shows a higher oxidation level?

67) Draw all possible functional groups belonging to the following fundamental structures:
X and Y represent heteroatoms.

a.- C – X

b.- Y-C-X

c.- Y-C≡X

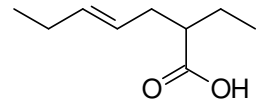
d.- Y-C=X

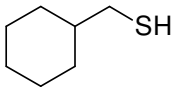
e.- C-C=X

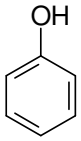
F.- Y=C=X

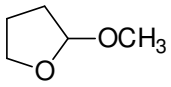
and give them a name.

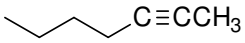
7) Give names to the main functional groups you see in the following compounds:

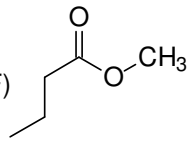
A) 

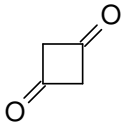
B) 

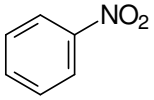
C) 

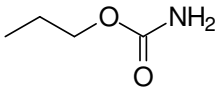
D) 

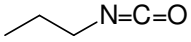
E) 

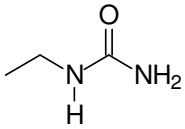
F) 

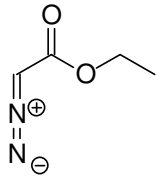
G) 

H) 

I) 

J) 

K) 

L) 

8) Give at least 4 examples of functional groups belonging to the following structural types:

a.- C-X b.- Z-C=X c.- C-X-X d.- C=X e.- X-C-X f.- $(Z)_2$-C=X