

Chem 141
Problem-Set
Wednesday 20th September 2006.

1. Draw a molecule of 2-methylcyclohexanol with both substituents in equatorial positions. Ring flip the six-membered ring to position the substituents axial.

2. Draw the following as bond-line illustrations.
 - a) 3-methyl-pentene

 - b) 3-methylhexanol

 - c) propyne

 - d) 3-chlorobutanoic acid.

 - e) dipropyl ether

 - f) N,N-dicyclopropylamine

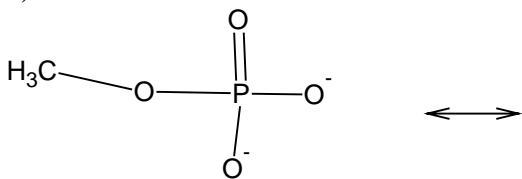
 - g) 1-chloro-2-butylbicyclo[3.3.0]octane

- 3) List **3** functional groups capable of hydrogen-bonding. Draw examples of those functional groups and circle the atoms which hydrogen-bond.

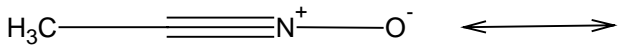
4) Draw an equation showing the reaction of an amine with a carboxylic acid. Name the resultant ions (specific names are not required just name the functional groups formed). Use specific examples not the generic R-group.

5) Show resonance contributing structures for the following compounds.

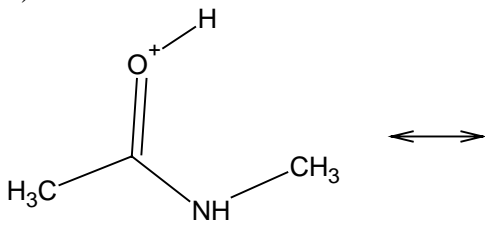
a)



b)



c)



d)

