Chemistry 204 Name: _____
Spring 2001
Test 1

1. For each of the following what functional group is present (12 points)?

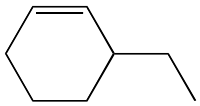
_____ $CH_3CH_2CH{=}CH_2$ _____ CH_3OCH_3

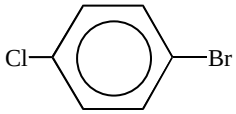
_____ CH_3CH_2OH _____ $CH_3\overset{\overset{O}{\|}}{C}CH_3$

2. Provide correct IUPAC names for the following compounds (18 points):

$CH_3CH_2CH_2CH_2CH_3$ _____

$CH_3CH_2\underset{\underset{CH_2CH_2CH_3}{|}}{C}HCH_2CH_3$ _____

 _____



_____

$CH_3CH_2OCH_2CH_2CH_3$ _____

CH_3OH _____

3. Draw out all possible isomers of C_5H_{10} using condensed structures (ignore cis/trans isomers). (12 points)

4. Suppose that you are given two test tubes and are told that one holds methyl alcohol and the other hexane. How can water be used to tell these substances apart without carrying out any chemical reactions? (4 points)

5. Write out structures for the following compounds: (15 points)

   isobutyl iodide

   cis-2,5-dimethyl-3-hexene

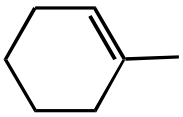
   o-chlorophenol

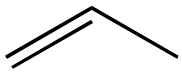
   1-propanethiol

   t-butyl alcohol

6. Place the following compounds in order of ***increasing*** boiling point. (6 points)
   A = $CH_3CH_2CH_2OH$ **B** = CH_3CH_3 **C** = $HOCH_2CH_2OH$ **D** = $CH_3CH_2OCH_3$

7. For each of the following alkenes, draw the structure of an alcohol that could be dehydrated to yield that alkene. (6 points)

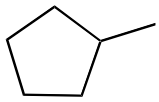


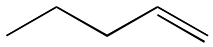


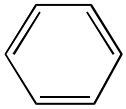
8. Write out condensed structures of the organic products of the following reactions. You need not provide the other products. If no reaction occurs, write "NR." (27 points)

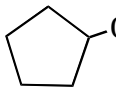
a) $CH_{4\,(g)} + Cl_{2\,(g)} \xrightarrow{h\nu}$

b) $CH_2{=}CHCH_3 + H_2O \xrightarrow[\text{catalyst}]{H^+}$

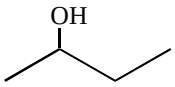
c)  $+ H_2 \xrightarrow[\text{catalyst}]{Ni}$

d)  $+ HCl \longrightarrow$

e)  $+ 3\,Cl_2 \longrightarrow$

f)  $\xrightarrow[\text{heat}]{H_2SO_4}$

g) $CH_3CH_2CH_2SH + [O] \longrightarrow$

h)  $\xrightarrow{KMnO_4}$

i) $CH_3CH_2O^- + CH_3CH_2Cl \longrightarrow$