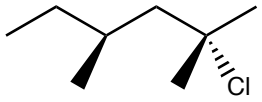
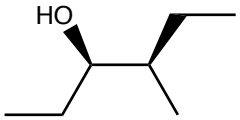
Name _____ Test 2 (11/10)
CHEM 0201 (Organic) Fall 2014

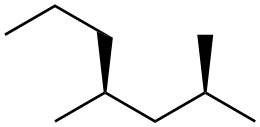
1. (6 pts. each) Provide names for the following molecules.

a. 

_____

b. 

_____

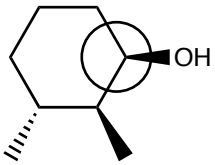
c. 

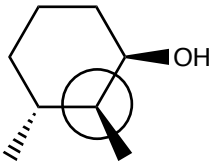
_____

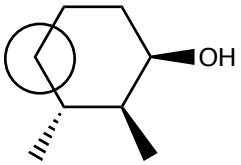
1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

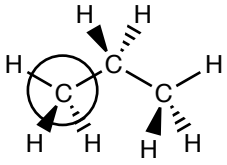
2. (12 pts.) Determine the degree of substitution (1°, 2°, 3°, 4°) for the circled C atoms on the structures drawn below.

7. _____
8. _____
9. _____

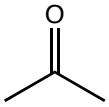




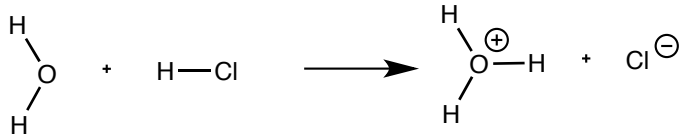




3. (10 pts) Acetone, drawn below, with a dipole moment of 2.91 D* has a stronger dipole than water, which has a dipole moment of 1.85 D*. The boiling point for water is 100 °C, whereas the boiling point for acetone is 56 °C. Which has the stronger intermolecular forces, water or acetone. Explain your response. *(Data retrieved from wikipedia.org)



4. (10 pts) Water reacts as with hydrogen chloride as drawn below.

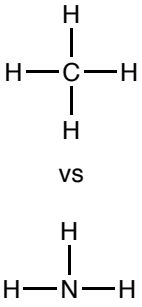
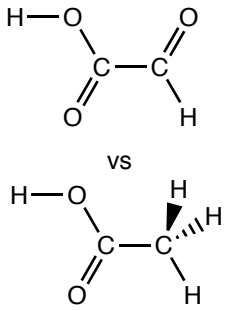
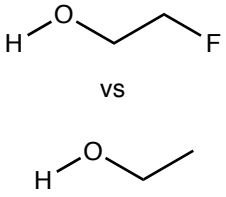


a. Is water acting as an acid or a base.

b. Explain why water can act in the manner you chose in part a.

5. a. (4 pts.) For each of the following molecules, identify the acidic hydrogen atom.

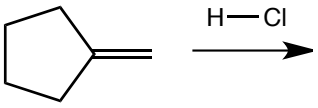
b. (8 pts.) For each pair of molecules below, determine which is the stronger acid.

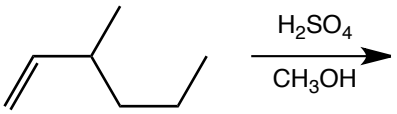
			

6. (10 pts.) Using ideas from valence bond theory as discussed in class, explain why carbon to carbon double bonds are nucleophilic.

7. (10 pts.) Explain why tertiary carbocations are more stable the secondary carbocations.

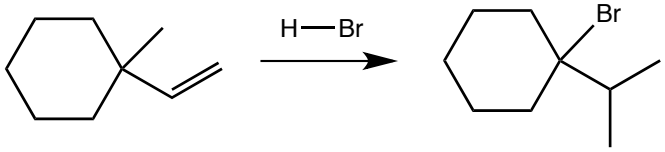
8. (6 pts. each) Predict the organic products for the following electrophilic addition reactions.

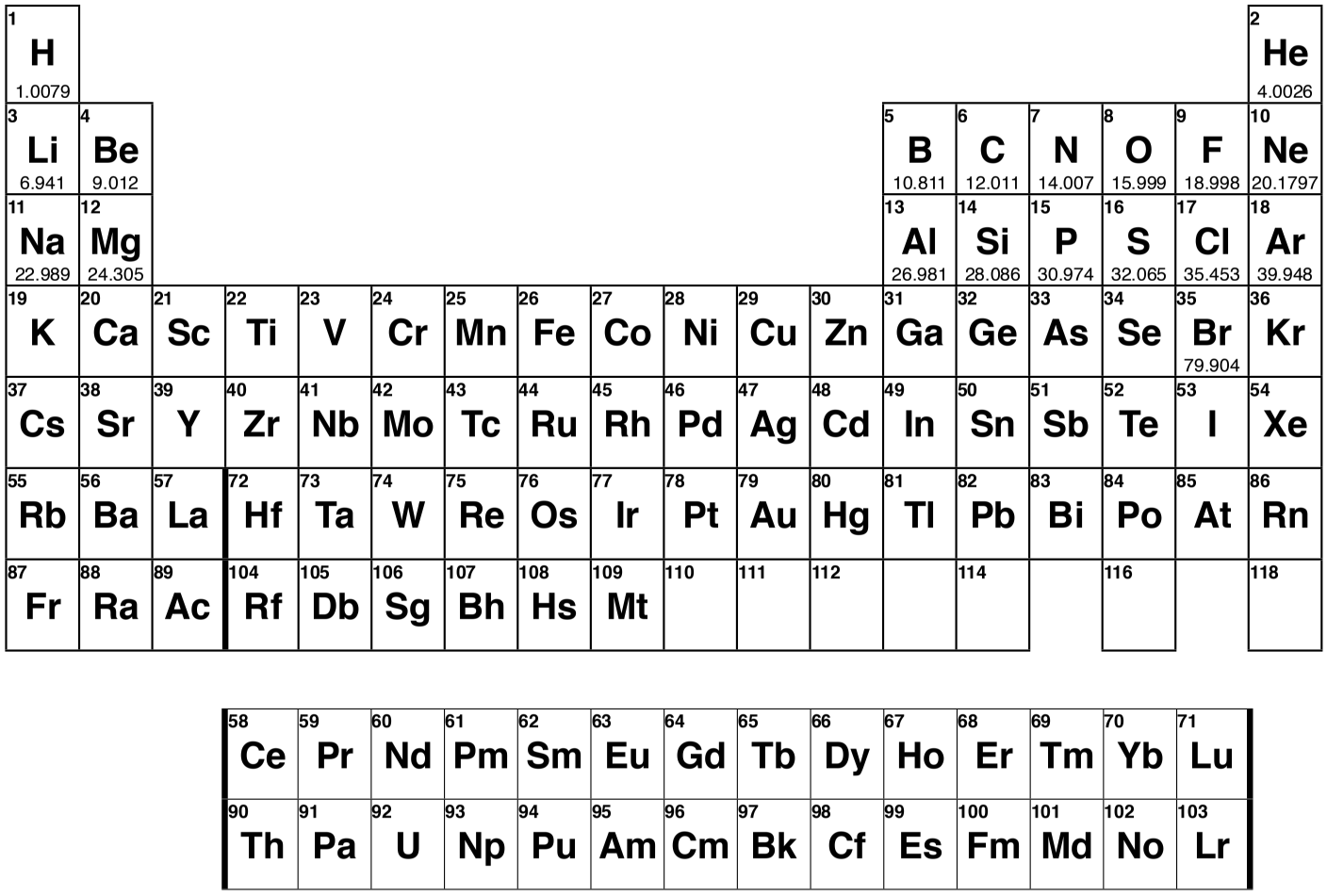
a. 

b. 

c. 

9. (10 pts.) Provide a mechanism (a stepwise reaction scheme) that shows how the product is formed in the following reaction. Include electron movement arrows.




1 H 1.0079
2 He 4.0026
3 Li 6.941
4 Be 9.012
5 B 10.811
6 C 12.011
7 N 14.007
8 O 15.999
9 F 18.998
10 Ne 20.1797
11 Na 22.989
12 Mg 24.305
13 Al 26.981
14 Si 28.086
15 P 30.974
16 S 32.065
17 Cl 35.453
18 Ar 39.948
19 K
20 Ca
21 Sc
22 Ti
23 V
24 Cr
25 Mn
26 Fe
27 Co
28 Ni
29 Cu
30 Zn
31 Ga
32 Ge
33 As
34 Se
35 Br 79.904
36 Kr
37 Cs
38 Sr
39 Y
40 Zr
41 Nb
42 Mo
43 Tc
44 Ru
45 Rh
46 Pd
47 Ag
48 Cd
49 In
50 Sn
51 Sb
52 Te
53 I
54 Xe
55 Rb
56 Ba
57 La
72 Hf
73 Ta
74 W
75 Re
76 Os
77 Ir
78 Pt
79 Au
80 Hg
81 Tl
82 Pb
83 Bi
84 Po
85 At
86 Rn
87 Fr
88 Ra
89 Ac
104 Rf
105 Db
106 Sg
107 Bh
108 Hs
109 Mt
110
111
112
114
116
118
58 Ce
59 Pr
60 Nd
61 Pm
62 Sm
63 Eu
64 Gd
65 Tb
66 Dy
67 Ho
68 Er
69 Tm
70 Yb
71 Lu
90 Th
91 Pa
92 U
93 Np
94 Pu
95 Am
96 Cm
97 Bk
98 Cf
99 Es
100 Fm
101 Md
102 No
103 Lr