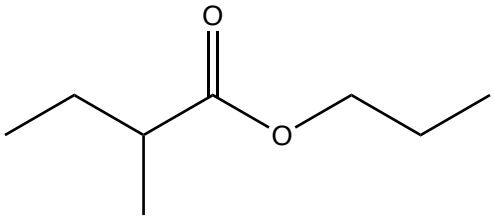
Name _____ Test 2 (4/10)
CHEM 0203 (Organic) Spring 2019

1. (6 pts. ea.) Provide IUPAC names for the following structures

a. 

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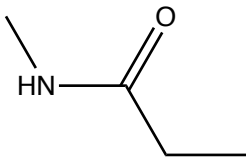
b. 

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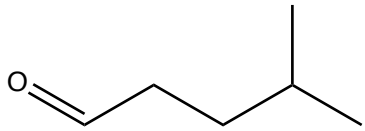
c. 

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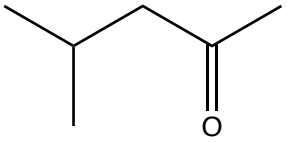
d. 

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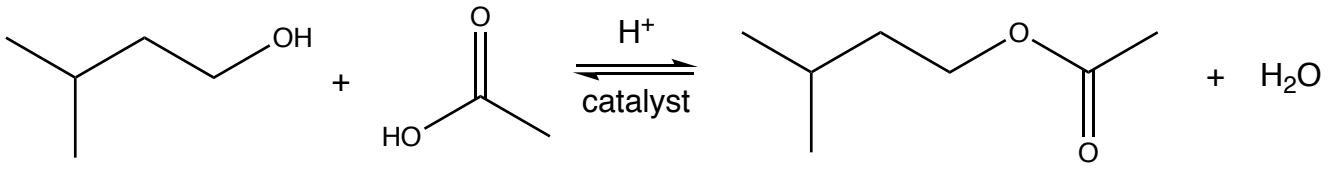
1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____

2. In general, esters are more easily hydrolyzed than amides.
   (a.10 pts.) Draw a generic reaction (just a balanced chemical equation, a mechanism is not needed) that shows the acid promoted hydrolysis of an amide.

   (b. 6 pts) Briefly, explain why esters are more easily hydrolyzed as compared to amides.

3. (a. 10 pts.) Draw a generic aldehyde and a generic ketone. (**b. 6 pts.**) Explain why aldehydes and ketones don't do acyl substitution reactions.

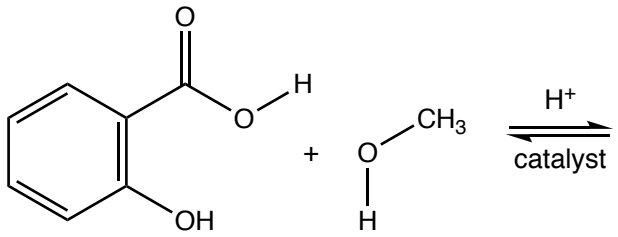
4. (14 pts.) Draw a mechanism for the acid catalyzed esterification of acetic acid and isoamyl alcohol to form isoamyl acetate. Remember to include electron movement arrows.



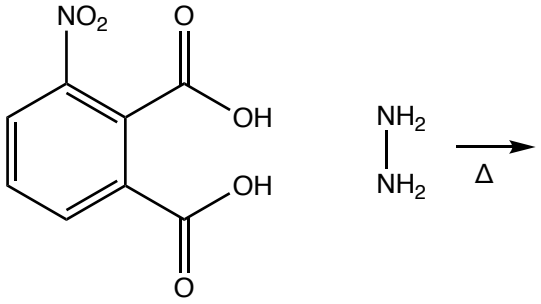
5. Esters can be hydrolyzed to a carboxylic acid and an alcohol using water and an acid catalyst (the reverse of the reaction shown in 4) or by promoting the reaction using hydroxide. The base promoted hydrolysis of an ester is not an equilibrium reaction. **(a. 6 pts.)** Draw the products of the base promoted hydrolysis of isoamyl acetate (pictured in 3) and **(b. 6 pts)** explain why the products do not reform the ester.

6. (18 pts.) Predict the products for the following acyl substitution reactions.

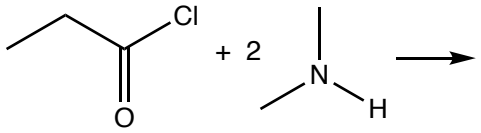
a.



b.

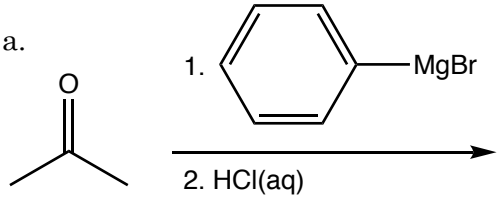


c.

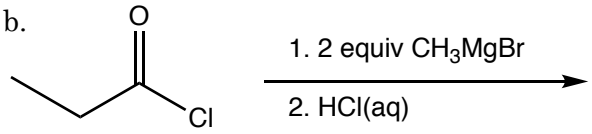


7. (18 pts.) Predict the products of the following reactions.

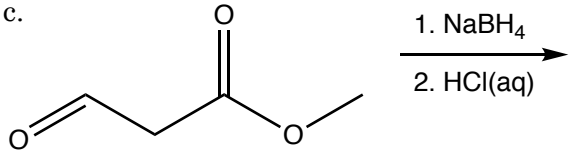
a.



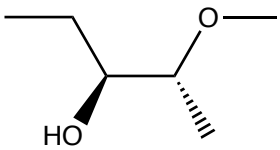
b.

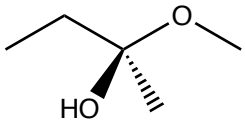


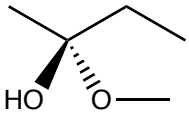
c.

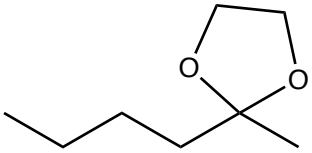


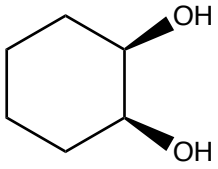
8. (16 pts.) Determine whether the following molecules are gem-diols, acetals, ketals, hemiacetals, hemiketals, or not one of the aforementioned functional groups.

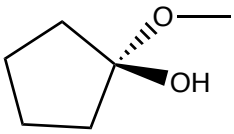


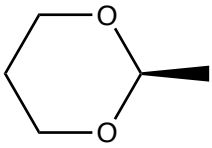


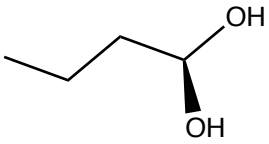




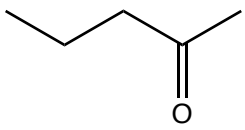


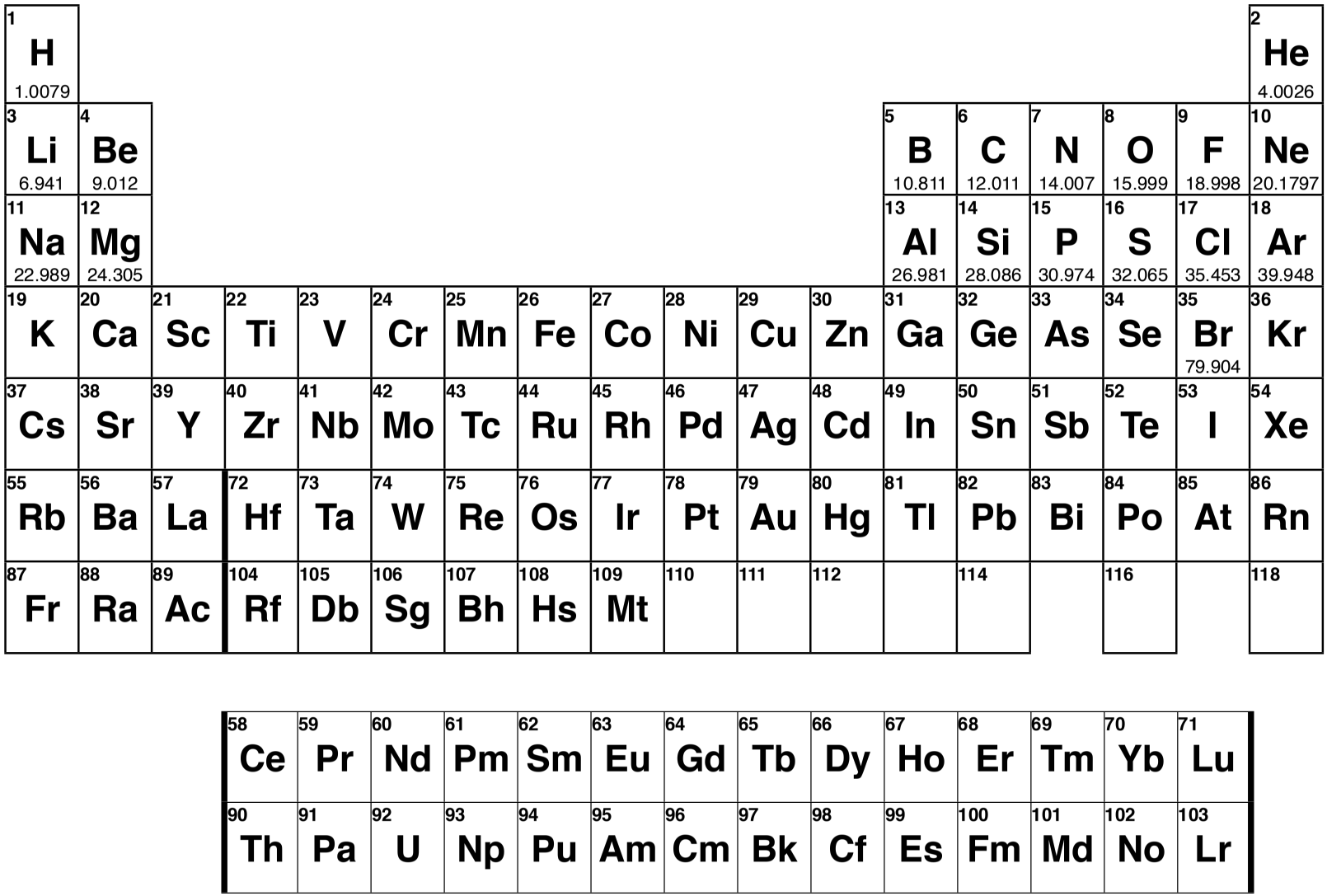






9. (10 pts.) Draw the enol forms for the following ketone.




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
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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