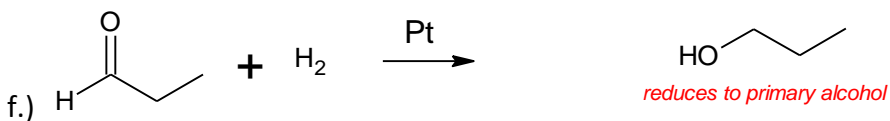
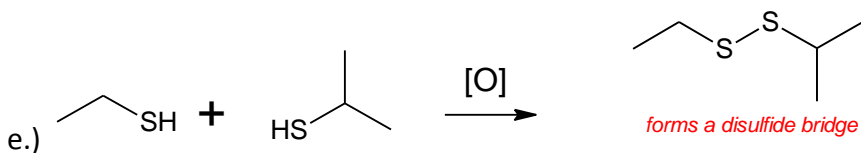
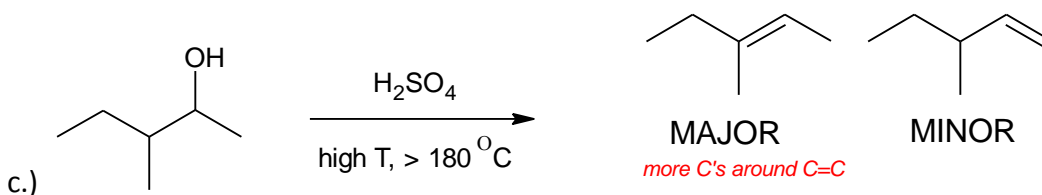
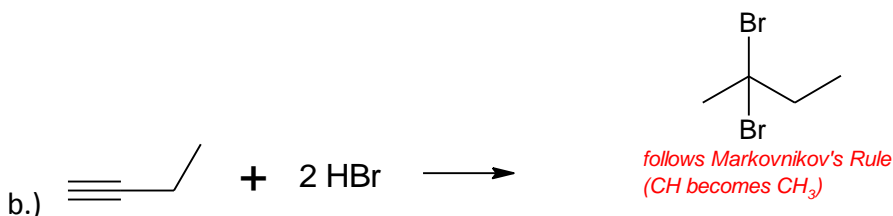
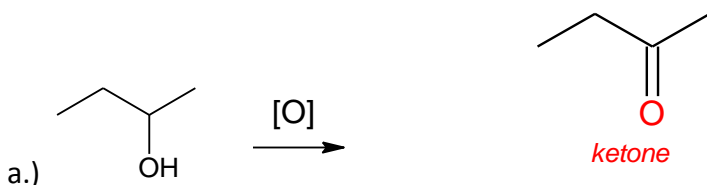


PRACTICE EXAM #2 (Ch. 2-4)

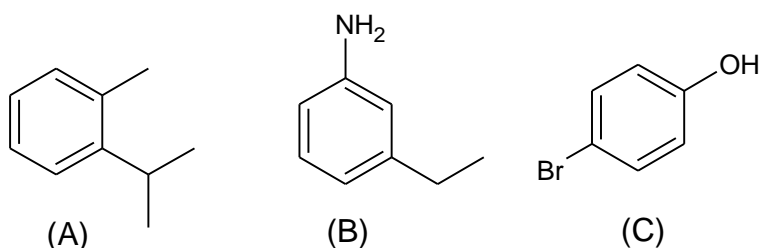
Chem21, Introduction to Organic and Biochemistry

Instructions: Don't panic. There are three (3) total pages for this exam. For every question, read all given directions and follow them completely. Clearly and logically show all your work and reasoning where applicable. Box all final answers.

1.) Draw the structures of the major products formed from the following reactions. If no reaction occurs, write "NO REACTION". (Hint: there is one no reaction; 48 pts, 8 pts ea)



2.) Name the following compounds. (18 pts, 6 pts ea)

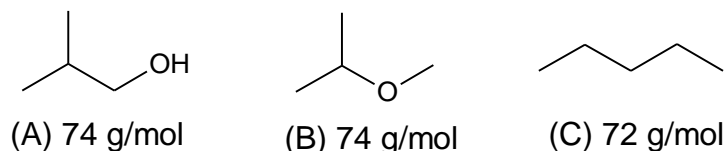


(A) 2-isopropyltoluene or ortho-isopropyltoluene

(B) 3-ethylaniline or meta-ethylaniline

(C) 4-bromophenol or para-bromophenol

3.) Consider the following compounds to answer the questions below. (30 pts)



a.) Name each of the compounds.

(A) 3-methyl-1-propanol or isobutanol

(B) isopropylmethyl ether

(C) pentane

b.) Which of the above (A-C) has the *strongest* intermolecular forces? (A)

c.) Which of the above (A-C) has the *weakest* intermolecular forces? (C)

d.) Arrange the above compounds (A-C) by *increasing* boiling point, starting with the lowest.

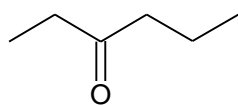
(C) < (B) < (A) (→ increasing intermolecular forces)

4.) Explain why tertiary alcohols do not oxidize, though primary and secondary do. (10 pts)

Tertiary alcohols **do not have a hydrogen** to lose on the alcoholic carbon. Adding a double bond between the C and O would give the carbon **too many (five) bonds**.

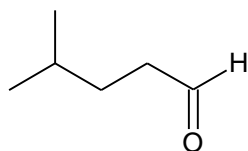
5.) Draw the line-angle structures for the following compounds. (21 pts)

a.) 3-hexanone



(C₆H₁₂O)

b.) 4-methylpentanal



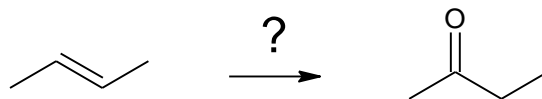
(C₆H₁₂O)

c.) Which of the above (a-b) are hydrogen bond **donors**? none

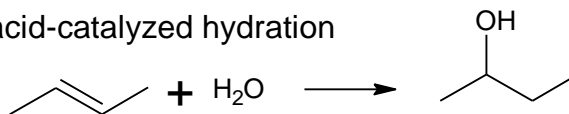
d.) Which of the above (a-b) are hydrogen bond **acceptors**? both (a) and (b)

e.) Are (a-b) *isomers* or *different compounds*? isomers

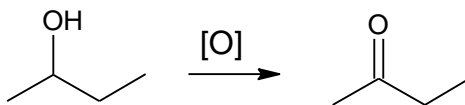
6.) Propose a synthesis with two steps to convert the reactant below to the indicated product. (24 pts)



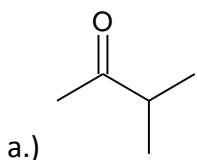
(1) acid-catalyzed hydration



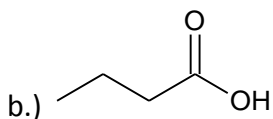
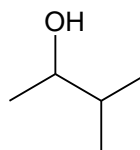
(2) oxidation



7.) The following compounds were prepared via oxidation of alcohols. Show the structure of the original alcohol that was used to produce the compound depicted below. (14 pts, 7 pt ea)



from secondary alcohol:



from primary alcohol:

