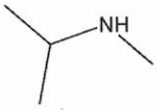
Organic Chemistry 1
Exam 1, Ch 1-4

Fall 2017

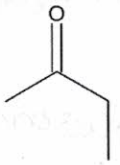
Name Key

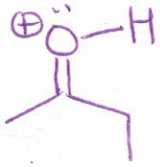
_____/40
Ch 3

15. Draw the conjugate base of: (2 pt)

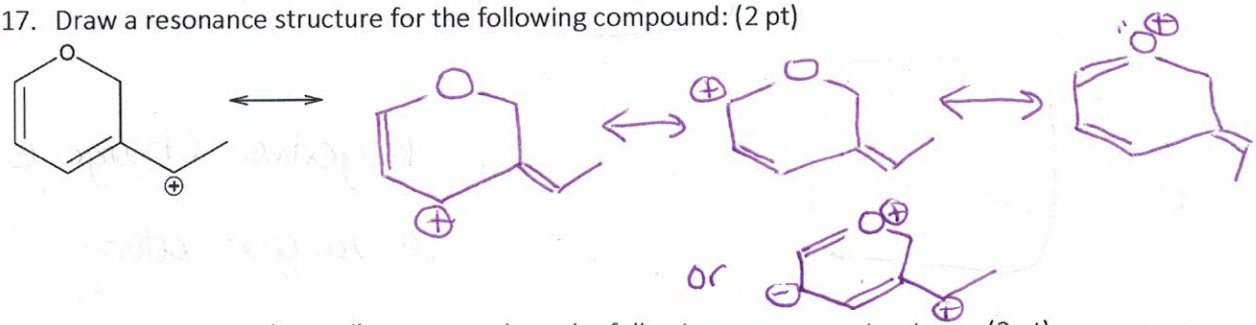


16. Draw the conjugate acid of: (2 pt)





17. Draw a resonance structure for the following compound: (2 pt)



18. Draw mechanistic (curved) arrows to show the following resonance structures. (2 pt)

19. Given the pKa of the following acids, explain which side the reaction is favored and why. (4 pt)

pKa = 38

less acidic

pKa = 16

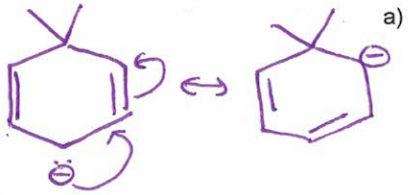
stronger acid

Reaction favors less acidic acid

_____/12

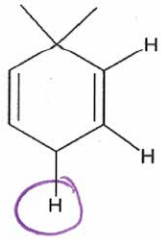
20. Circle the most acidic **proton** in each compound. (4 pt)

conj. base:

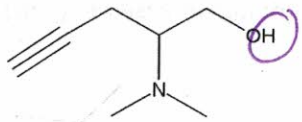


has resonance

a)

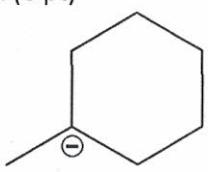


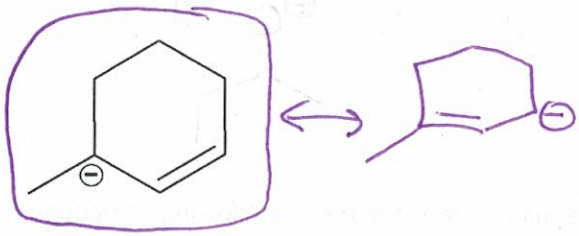
b)



21. Circle the **more stable anion** in each set and <u>Explain</u> why. If the reasoning is resonance, draw the resonance structure. (6 pt)

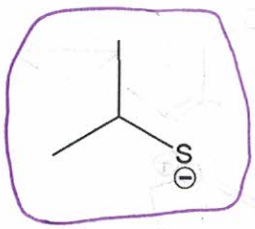
a)

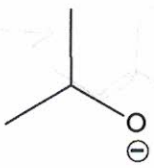




Resonance

b)

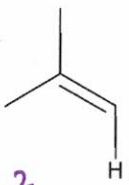




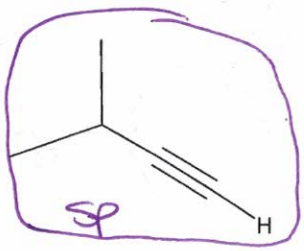
Negative Charge is on a larger atom

22. Circle the more **acidic compound** in each set and **Explain** why. If the reasoning is resonance, draw the resonance structure. (9 pt)

a)



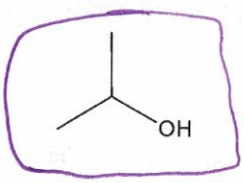
sp²

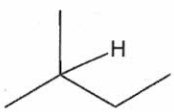


sp

Orbitals
H is on sp-hybridized carbon

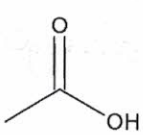
b)

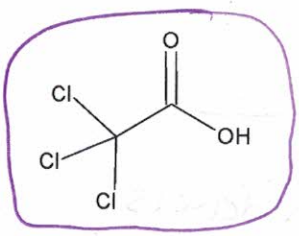




Oxygen is more electroneg. than carbon

c)



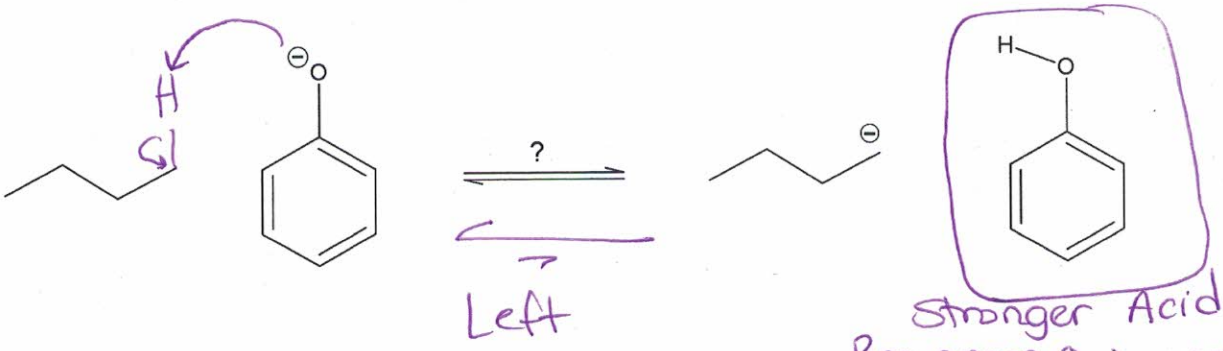


Induction

_____/19

23. For each reaction below, draw a mechanism (curved arrows), circle the stronger acid, and predict which side of the reaction is favored under equilibrium conditions (Left or Right). Explain why you chose the sronger acid. (5 pt)

(2) (1) (1) (1)

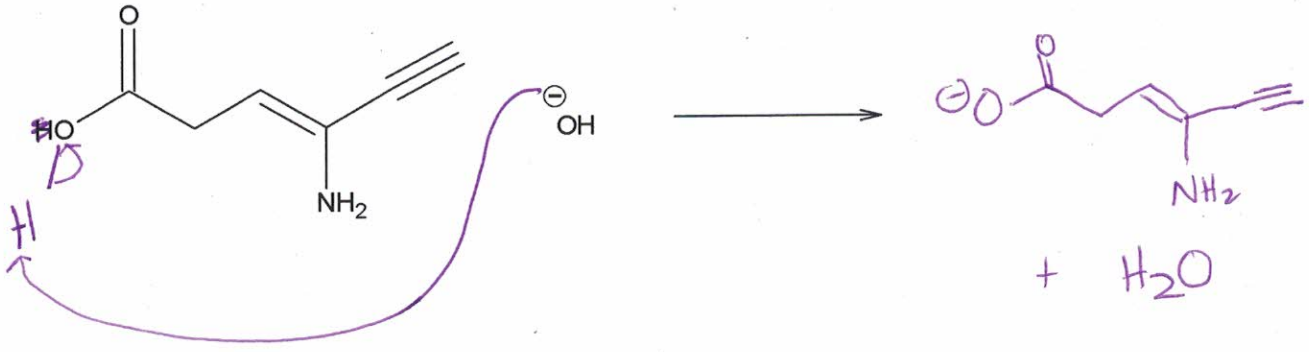


Left

Stronger Acid

Resonance, O is more electrone than C

24. Show the mechanism for the reaction that takes place when you mix the hydroxide anion with the following compound, as well as the product. (4 pt)



+ H_2O

1 pt: correct H

1 pt: product per arrows

2 pt: mechanism

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