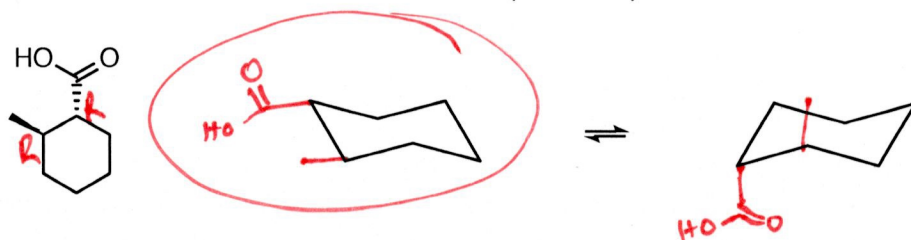
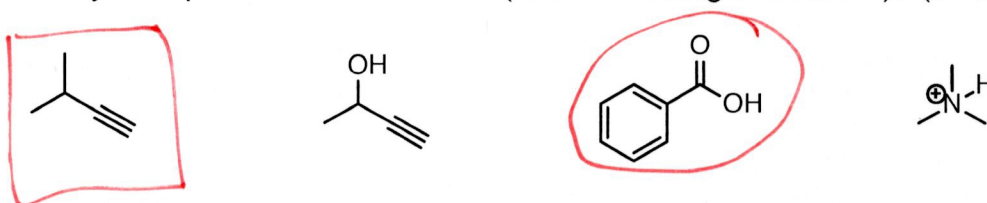


1. Use *R* or *S* to label the chiral carbons in the molecule below. Then draw the two different chair conformations (the chairs have been started for you) for the modified cyclohexane below. Circle the more stable conformation. (5 marks)



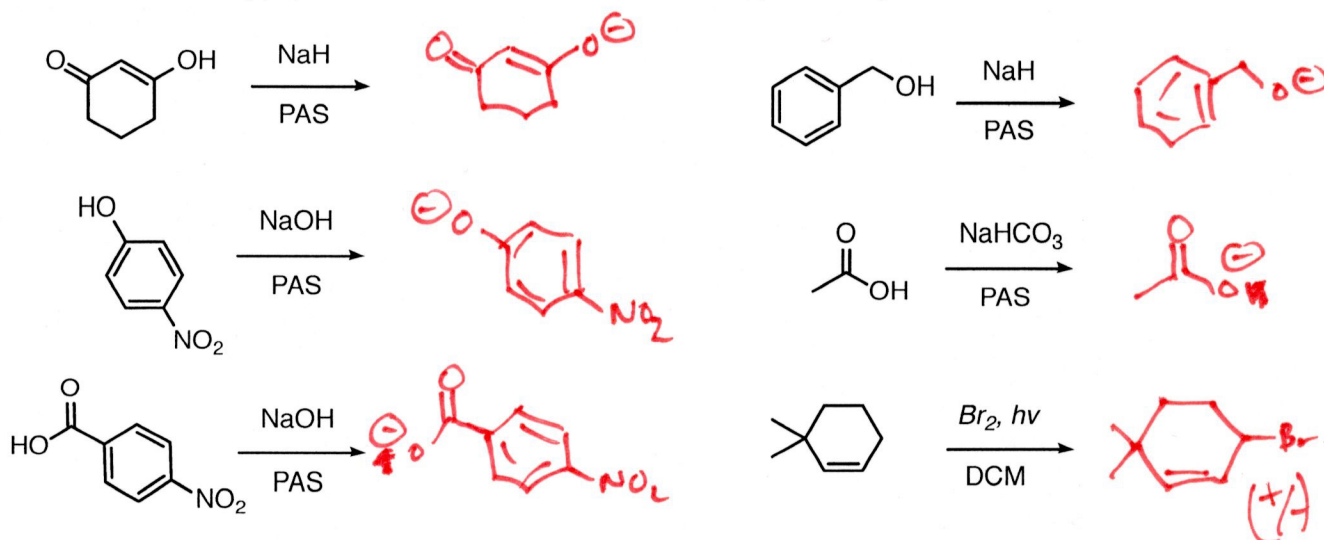
2. Which molecule below would you expect to be most acidic (circle it)? What molecule below would you expect to be least acidic (draw a rectangle around it)? (2 marks)



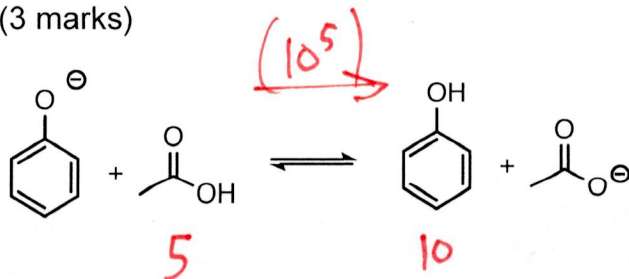
3. Which anion below is most stable (circle it)? What anion below is least stable (draw a rectangle around it)? (2 marks)



4. What is the major product of each reaction below? (6 marks)

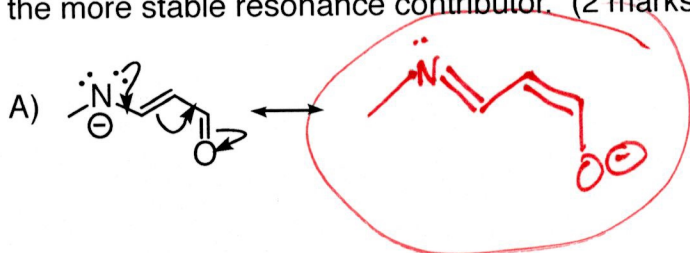


5. What side of the equilibrium below is favoured (be sure to include the pKa's of the appropriate acids)? (3 marks)



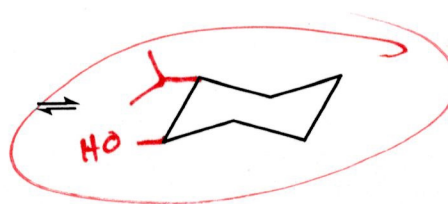
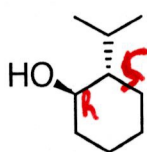
1. Given the resonance structure below, draw another resonance contributor that results from the described electron movement. In addition, circle the more stable resonance contributor. (2 marks)

2. How many sp^2 carbons are present in A (above)? (1 mark)

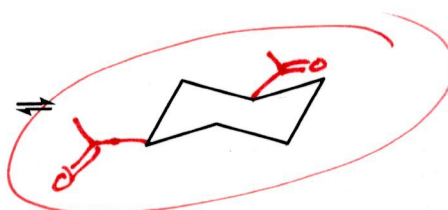
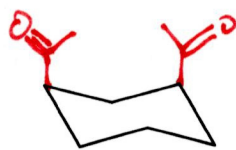
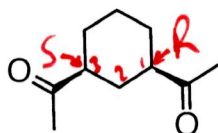


3

3. Use *R* or *S* to label the chiral carbons in the molecule below. Then draw the two different chair conformations (the chairs have been started for you) for the modified cyclohexane below. Circle the more stable conformation. (5 marks)



4. Use *R* or *S* to label the chiral carbons in the molecule below. Then draw the two different chair conformations (the chairs have been started for you) for the modified cyclohexane below. Circle the more stable conformation. (5 marks)



5. What is the product of each of the bromination reactions below (5 marks)?

