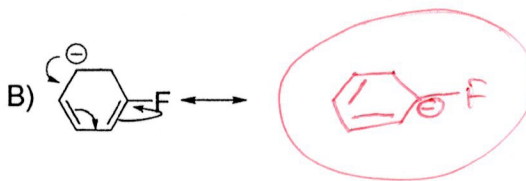
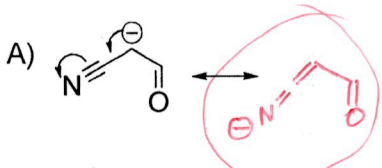


1. Given the resonance structure below, draw another resonance contributor that results from the described electron movement. In addition, circle the more stable resonance contributor in each set. (4 marks)



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

4

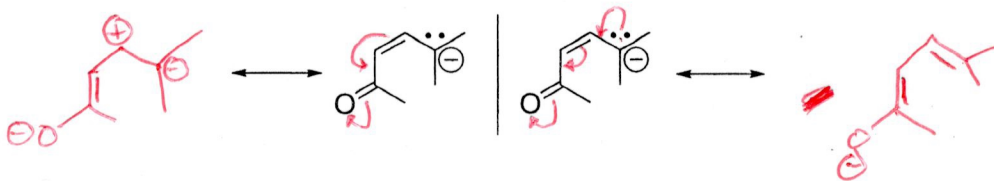
3. What functional groups (other than alkanes) are present in A above (2 marks)?

aldehyde, nitrile

4. How many sp -hybridized atoms are present in A (above)? (1 mark)?

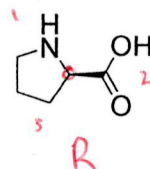
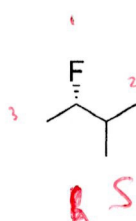
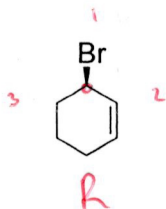
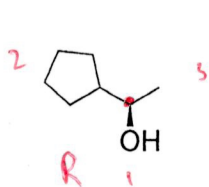
2

5. Draw unique resonance contributors for the molecule below. Be sure to include the curly arrows on the given molecule that lead to your contributor (4 marks)?

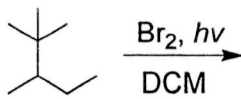
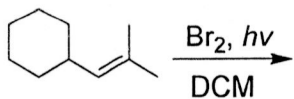


a few more possibilities exist here.

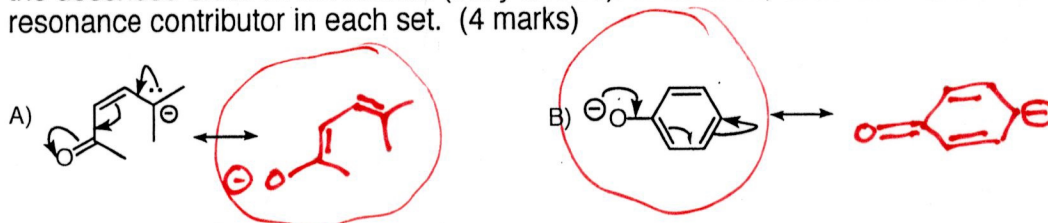
6. Use *R* or *S* to label the chiral carbons in the molecules below. (4 marks)



7. What is the product of each of the bromination reactions below (2 marks)?



1. Given the resonance structure below, draw the resonance contributor that results from the described electron movement (curly arrows). In addition, circle the more stable resonance contributor in each set. (4 marks)



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

6

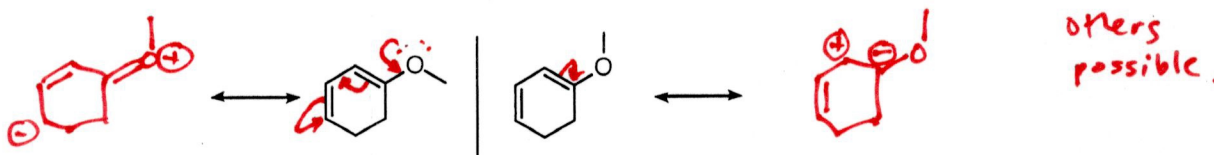
3. What functional groups (other than alkanes) are present in A above (2 marks)?

alkene, ketone

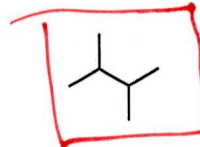
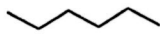
4. How many sp^2 -hybridized atoms are present in A (above)? (1 mark)?

4

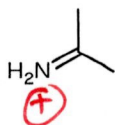
5. Draw unique resonance contributors for the molecule below. Be sure to include the curly arrows on the given molecule that lead to your contributor (4 marks)?



6. Circle the molecule that you would expect to have the highest boiling point and draw a rectangle around the molecule that you expect has lowest boiling point (2 marks).



7. Lone pairs have been added where appropriate. Show the formal charge on the atoms below (2 marks).



8. Identify any chiral carbons with an asterisks (*) in the molecules below (2 marks).

