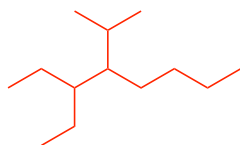


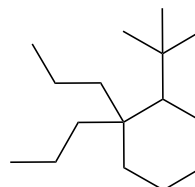
Organic 1: Exam 1 (135 pts), Fall 2026

Name: Key

1. (12 pts) Provide the structure for the name given below and the IUPAC name of the structure given

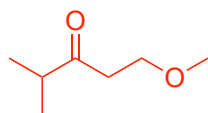


3-ethyl-4-isopropyloctane

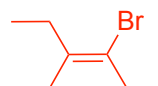


2-(tert-butyl)-1,1-dipropylcyclohexane

2. (12 pts) Expand the following condensed structures to provide bond-line structures.

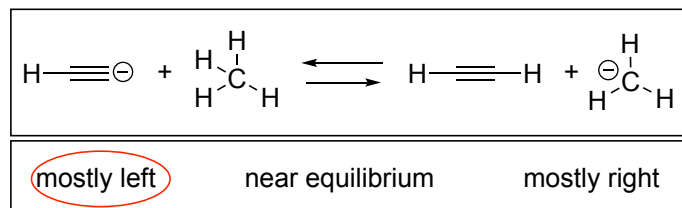
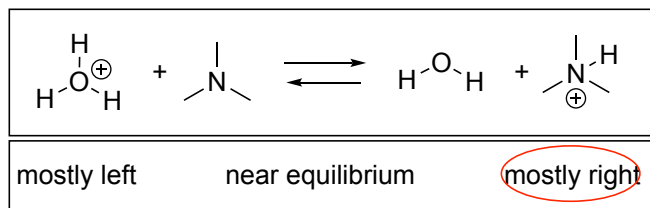


$(\text{CH}_3)_2\text{CHC}(\text{O})\text{CH}_2\text{CH}_2\text{OCH}_3$

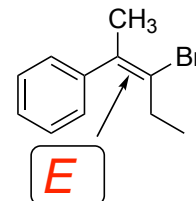
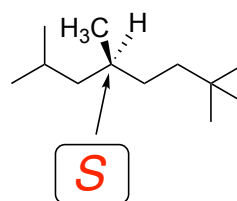
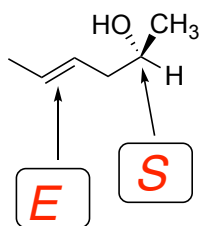
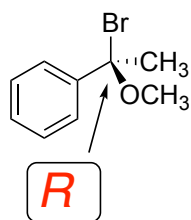


$\text{CH}_3\text{CH}_2\text{C}(\text{CH}_2\text{CH}_3)\text{CBrCH}_2\text{CH}_3$

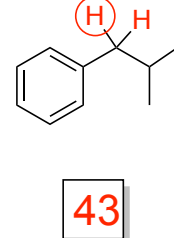
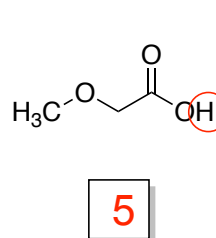
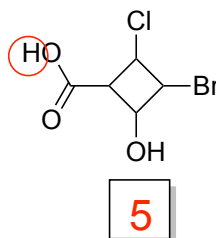
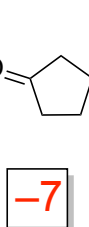
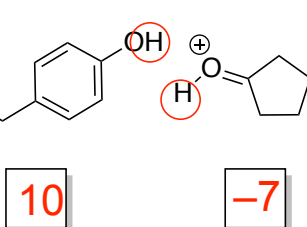
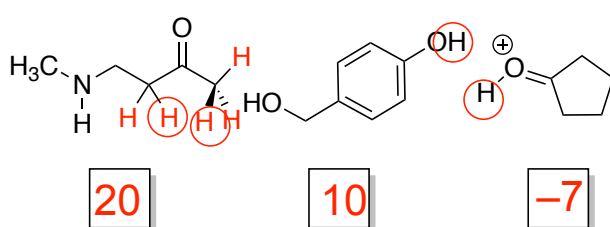
3. (6 pts) Using your pKa values indicate the direction of the equilibrium for each of the reactions below



4. (15 pts) Assign the absolute stereochemical configuration (*R* or *S*) or the alkene geometry (*E* or *Z*).

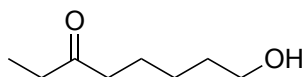


5. (12 pts) Circle or draw in the most acidic proton then provide pKa values for each of the compounds below.



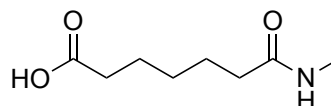
I remain surprised and annoyed that I cannot convey the importance of mastering this

6. (16 pts) For each box of compounds below, name the TWO functional groups in each molecule.



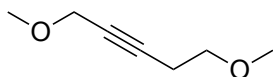
ketone

1° alcohol



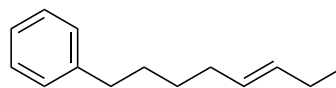
carboxylic acid

amide



ether

alkyne

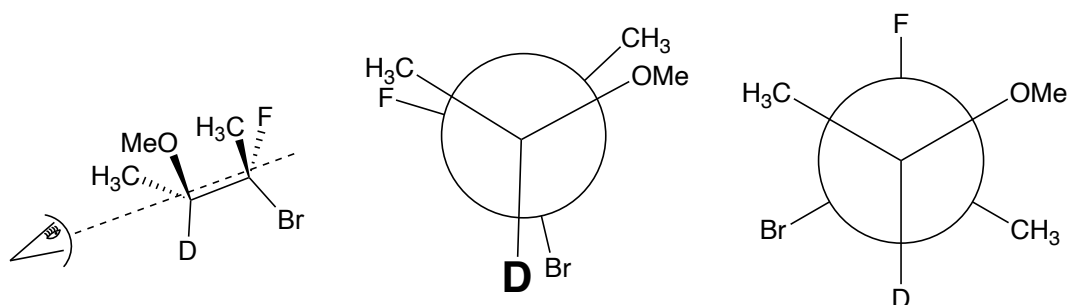


phenyl (or aromatic group)

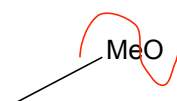
benzene is a molecule not a group
benzyl is really not correct at all

alkene

7. (11 pts) Complete the Newman projection along the C2–C3 bond for the structure given below. Then, complete the 2nd Newman projection where the CH₃'s are anti.

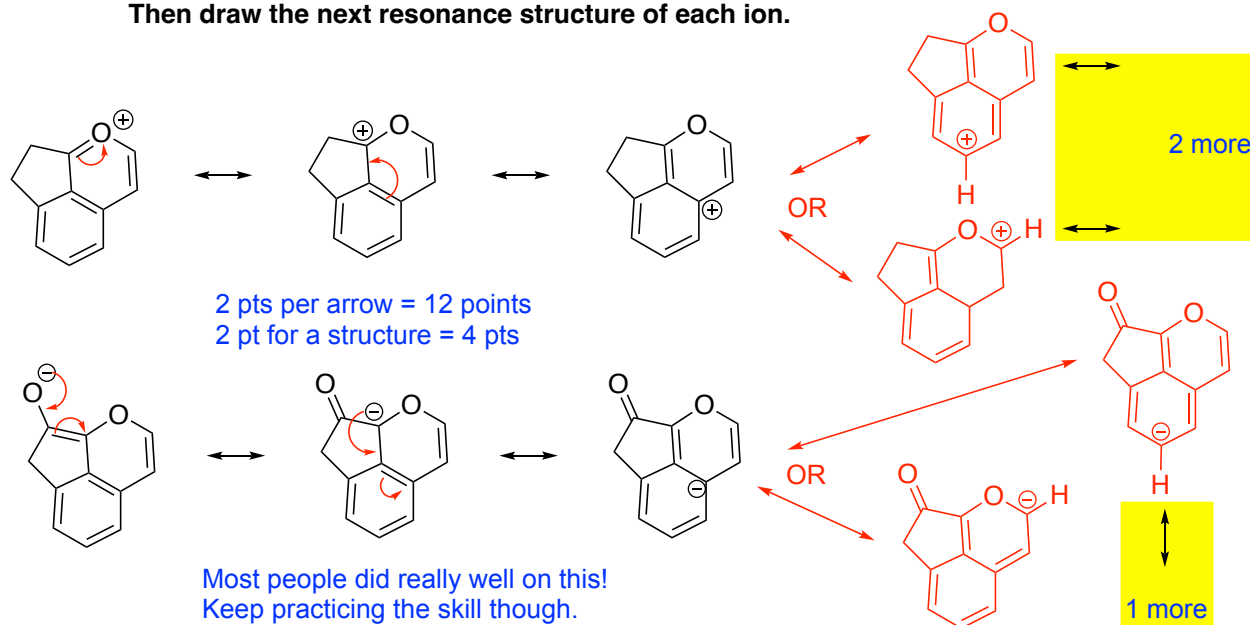


NOTE



Many people did this. It is not correct
The O is attached to the carbon

8. (16 pts) CAREFULLY draw in appropriate arrows to finish each of the following resonance structures. Then draw the next resonance structure of each ion.

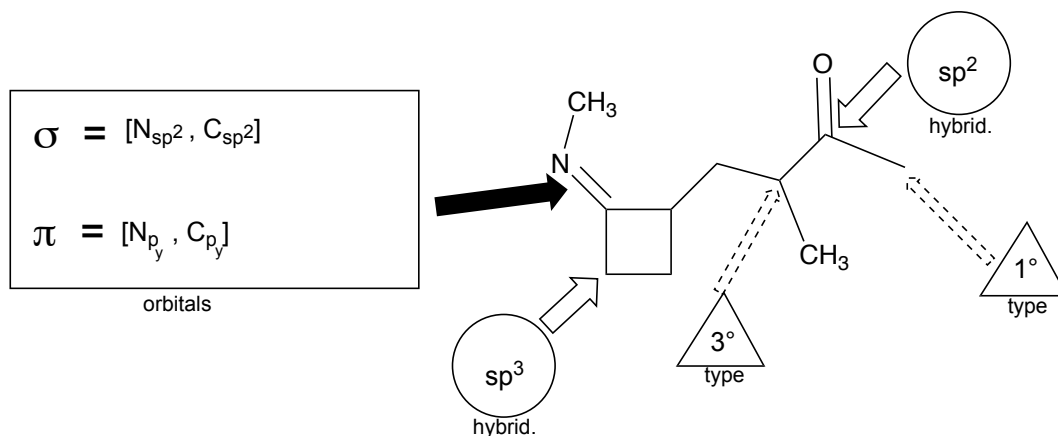


9. (12 pts) For the indicated locations (on the molecule omaveloxolone given below),

in the 2 circles labeled "hybrid.," give the indicated atom's hybridization (i.e. sp^3 , sp^2 , or sp)

in the 2 triangles labeled "type", indicate the type of carbon (i.e. 1° , 2° , 3° , 4° , 5°)

in the 2 boxes labeled "orbitals", indicate the orbitals that makeup the indicated bonds



10. (27 pts) Circle the answer (under each) for each pair of compounds

constitutional isomers = const.; enantiomers = enant.; diastereomers = diast.

