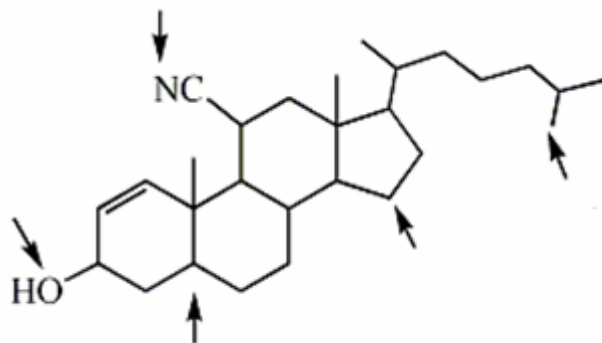


First Semester Brief Review Material

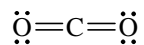
1. Label the type of orbital hybridization at each atom indicated with an arrow. For all sp^3 hybridized carbon atoms, label as being primary, secondary, or tertiary.



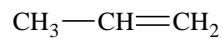
- How many hydrogens are there here?
- How many sp^2 hybrid orbitals?
- How many unhybridized p-orbitals?
- Would you classify this molecule as polar or nonpolar?

2. Draw a detailed valence-bond orbital picture of the following molecules:

a)



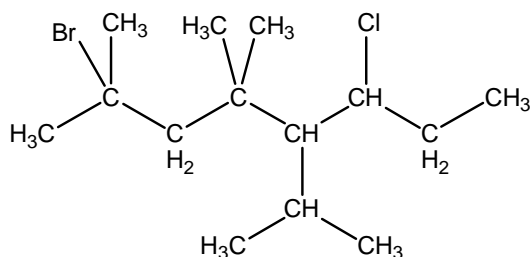
b)



c) C_2H_2

d) CO

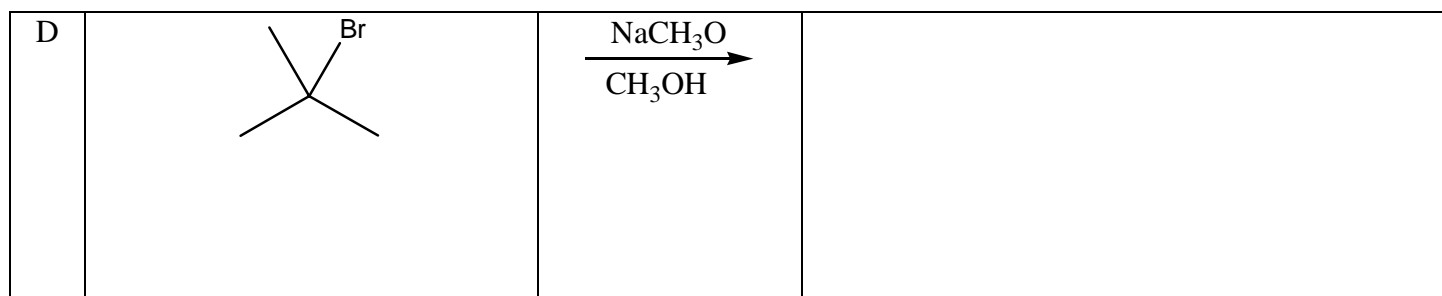
3. Name the following compound.



4. Draw the monobromination (Br_2 and light) products for (1R, 2S)-1,2-dimethylcyclopentane. Be sure to label the products as enantiomers or diastereomers and also indicate stereochemistry.

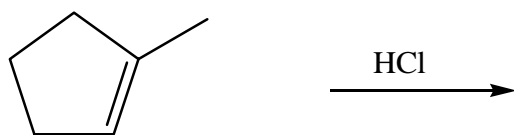
5. Complete the following reactions indicating stereochemistry where necessary. Also, indicate which mechanism was used: $\text{S}_{\text{N}}1$, $\text{S}_{\text{N}}2$, E1, or E2.

A		$\xrightarrow[\text{NH}_3(\text{l})]{\text{NaNH}_2}$	
B		$\xrightarrow[\text{Acetone}]{\text{NaI}}$	
C		$\xrightarrow{\text{MeOH}}$	

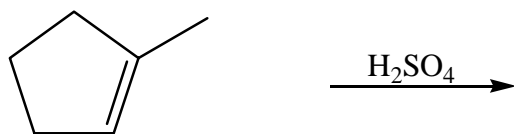


6. Draw the products that result from the following reactions with 1-methylcyclopentene. (A-J). Be sure to include stereochemistry where necessary.

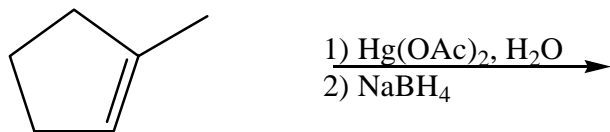
a



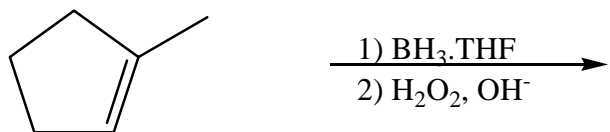
b



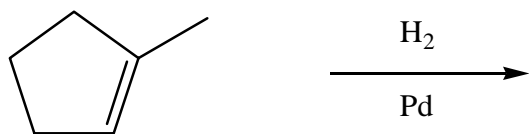
c



d



e



f



g

