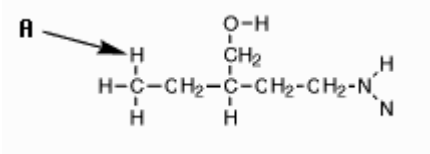
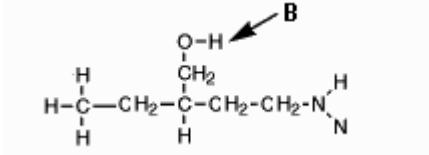
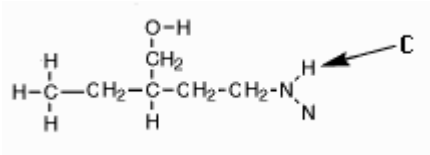
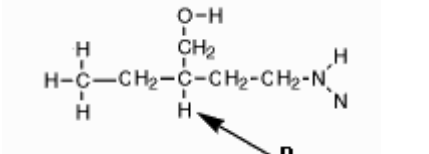
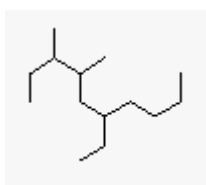


Organic Chemistry (I) chapter 2

1. Which hydrogen in the following molecule would you expect to be the most acidic (i.e., most easily removed as H^+)?

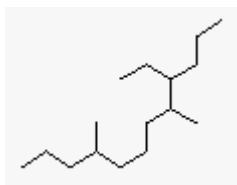
- A. 
- B. 
- C. 
- D. 
- E. None of these can be considered acidic.

2. What is the correct IUPAC name for the following molecule?



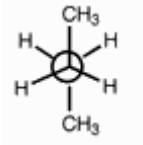
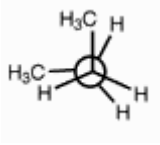
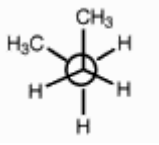
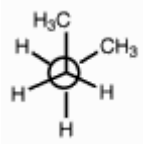
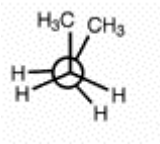
- A. 6-butyl-3,4-dimethyloctane B. 5-ethyl-7,8-dimethyldecane
 C. 6-ethyl-3,4-dimethyldecane D. 3,4-dimethyl-6-ethyldecane
 E. 3-butyl-5,6-dimethyloctane

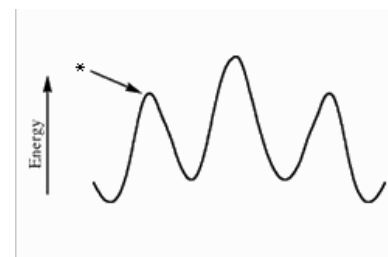
3. Choose the correct IUPAC name for the following molecule.



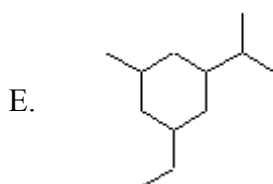
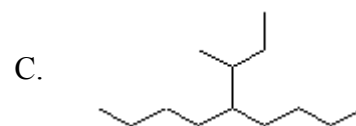
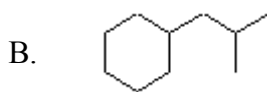
- A. 4,8-dimethyl-3-propylundecane B. 9-ethyl-4,8-dimethyldodecane
 C. 4,8-dimethyl-9-propylundecane D. 4-ethyl-5,9-dimethyldodecane
 E. 4,8-dimethyl-9-ethyldodecane

4. To which conformation of butane would the position marked with an asterisk in the following energy diagram correspond?

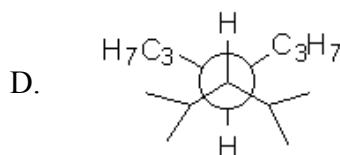
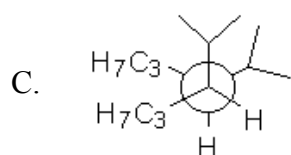
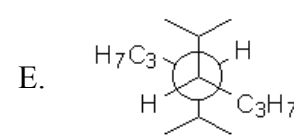
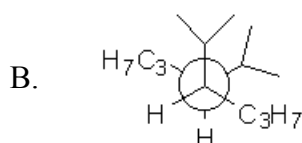
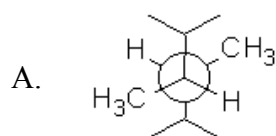
- A. 
- B. 
- C. 
- E. 
- D. 



5. Which of the following structures contain the *sec*-butyl group?



6. Which of the following Newman projections represents "sighting down" the C4-C5 bond of 4,5-di-isopropyloctane in the conformation in which the two isopropyl groups are *anti* with respect to each other?



7. How many isomers are possible for the formula C_7H_{16} ?

(Hint: Do you have to worry about rings or double bonds for this formula? Why not? Be systematic: Draw the straight-chain isomer, then systematically go through all possible branched isomers.)

A. five

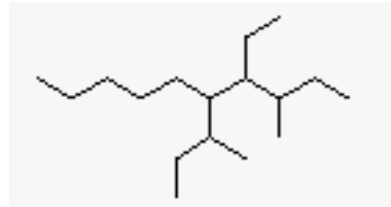
B. six

C. seven

D. nine

E. eight

8. Choose the correct IUPAC name for the following molecule.



A. 4-Ethyl-3-methyl-5-*sec*-butyldecane

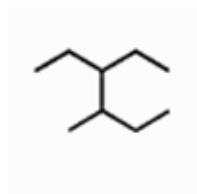
B. 5-*sec*-Butyl-4-ethyl-3-methyldecane

C. 6-*sec*-Butyl-7-ethyl-8-methyldecane

D. 4-Ethyl-3,6-dimethyl-5-pentyldecane

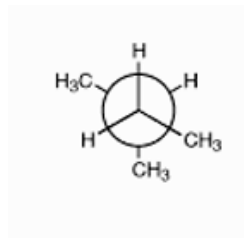
E. 4-Ethyl-5-isobutyl-3-methyldecane

9. What would the correct name of the following molecule be?



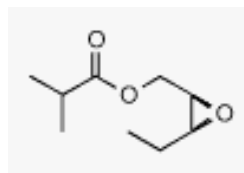
- A. 3-(2-butyl)-pentane B. 3-methyl-4-ethylpentane
C. 3-ethyl-4-methylhexane D. 3,4-diethylpentane
E. 2,3-diethylpentane

10. What molecule does the Newman projection shown correspond to?



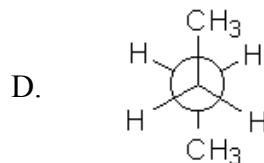
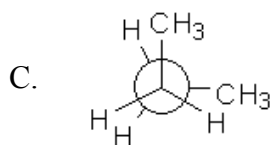
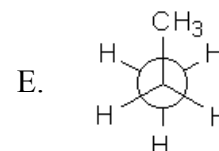
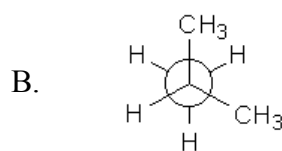
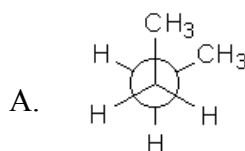
- A. butane D. 2-methylbutane
B. pentane E. isobutane
C. 3-methylbutane

11. The following molecule contains which recognizable functional group(s)?

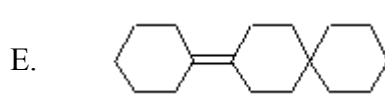
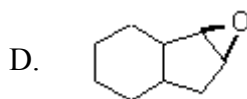
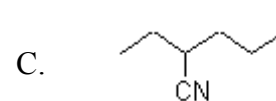
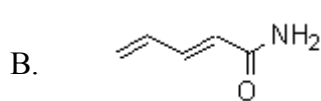
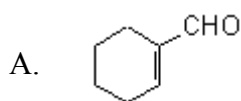


- A. ketone and ester D. ketone and epoxide
B. ester E. aldehyde and oxirane
C. ester and epoxide

12. Which of the following Newman Projections represents the *lowest* energy conformation for butane?



13. Which of the following molecules contains at least one carbon atom that is *sp* hybridized?



14. A thorough study of organic chemistry requires a basic understanding of acid and base strengths. Which of the following molecules most likely has a $pK_a = 15.5$?

A. H_2SO_4

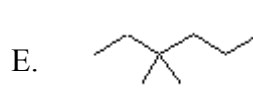
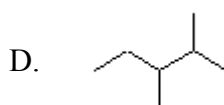
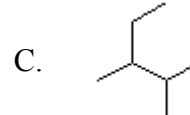
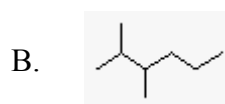
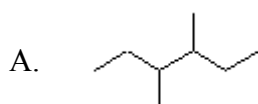
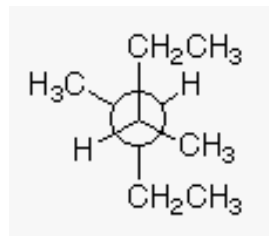
B. HCl

C. Methanol

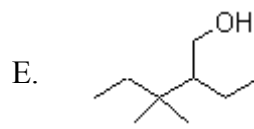
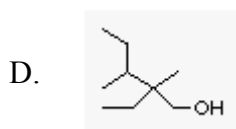
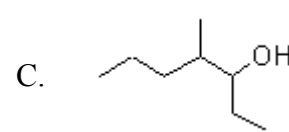
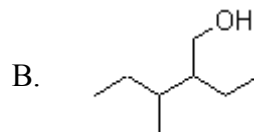
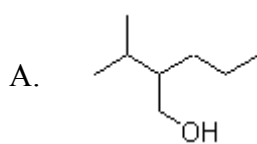
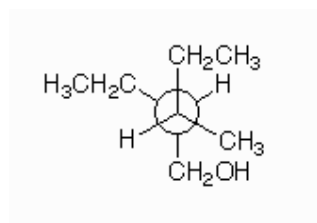
D. Methane

E. Acetic Acid

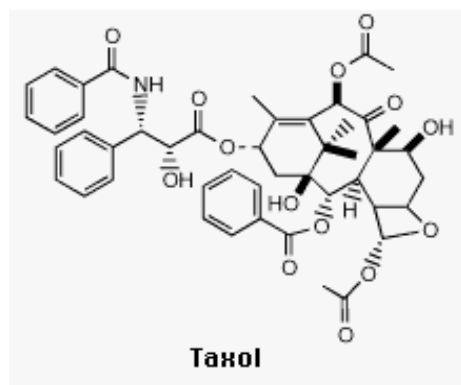
15. Choose the zigzag structure that corresponds to the molecule depicted in the following Newman projection.



16. The following Newman Projection represents which of the following zig-zag structures?



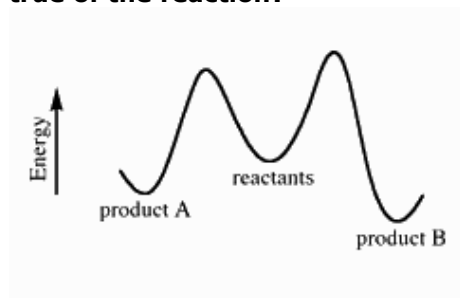
17. Taxol (see structure below) is a potent chemotherapeutic agent (isolated from the Pacific Yew tree) which is especially effective against ovarian cancer. Which of the following functional groups is *not* contained in taxol?



A. Ketone B. Ester C. Amide

D. Amine E. Alcohol

18. Given the following energy diagram for a hypothetical reaction, which statements would be true of the reaction?



- A. Product B will be formed faster, but product A would predominate at equilibrium if both reactions are reversible.
- B. Product A will be formed faster, and product A would predominate at equilibrium if both reactions are reversible.
- C. Product B will be formed faster, and product B would predominate at equilibrium if both reactions are reversible.
- D. Product A will be formed faster, but product B would predominate at equilibrium if both reactions are reversible.
- E. Product B will predominate whether or not the reactions are reversible.

19. Which of the following hydrocarbons would you expect to have the lowest boiling point?

