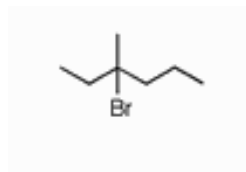


Organic Chemistry (I) Chapter 6

1- How should you name the following alkyl bromide?



- A. 4-bromo-4-methylhexane
B. 2-bromo-2-ethylpentane
C. 3-bromo-3-methylhexane
D. 2-bromo-2-propylbutane
E. 4-bromo-4-ethylpentane

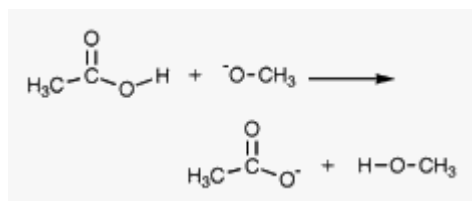
2- Which of the molecules shown would you expect to have the highest boiling point?

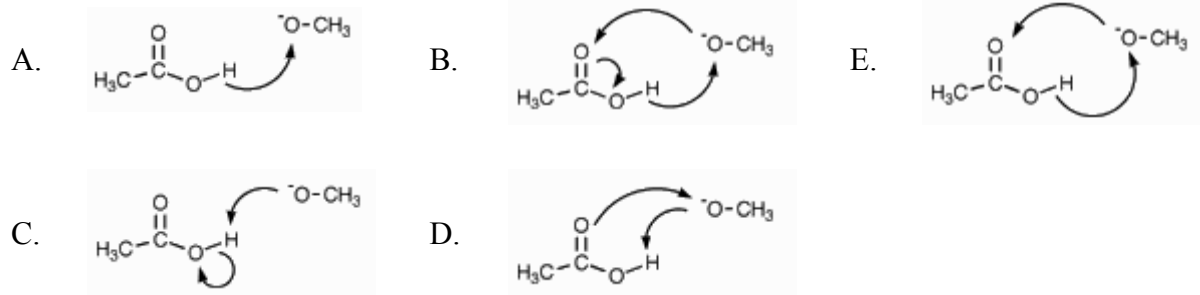
- A. $\text{CH}_3\text{CH}_2\text{CH}_2\text{Br}$
B. $\text{CH}_3\text{CH}_2\text{CH}_2\text{Cl}$
C. $\text{CH}_3\text{CH}_2\text{CH}_2\text{I}$
D. $\text{CH}_3\text{CH}_2\text{CH}_3$
E. $\text{CH}_3\text{CH}_2\text{CH}_2\text{F}$

3- Which best depicts the partial charges on methyl bromide and sodium methoxide?

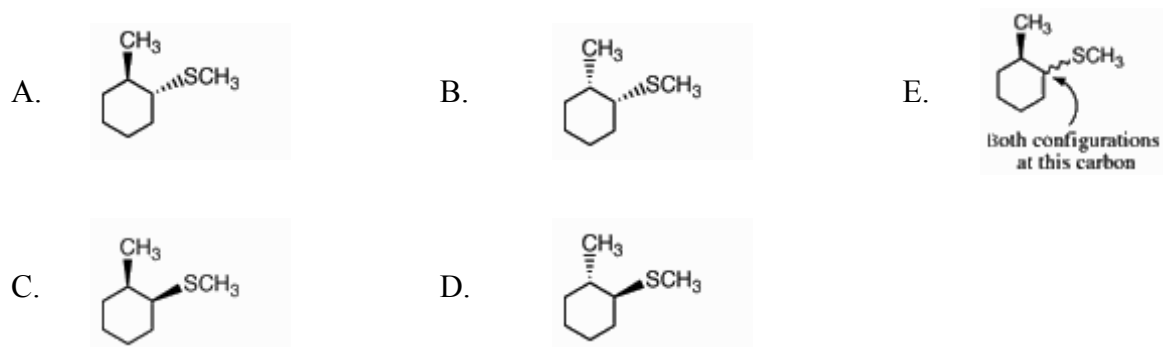
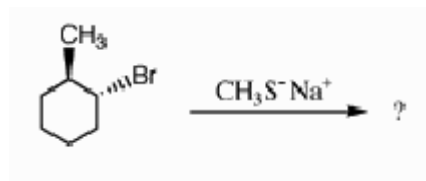
- A. $\overset{\delta+}{\text{H}_3\text{C}}-\overset{\delta-}{\text{Br}}$ $\overset{\delta+}{\text{Na}}-\overset{\delta-}{\text{OCH}_3}$ B. $\overset{\delta-}{\text{H}_3\text{C}}-\overset{\delta+}{\text{Br}}$ $\overset{\delta-}{\text{Na}}-\overset{\delta+}{\text{OCH}_3}$
C. $\overset{\delta-}{\text{H}_3\text{C}}-\overset{\delta+}{\text{Br}}$ $\overset{\delta+}{\text{Na}}-\overset{\delta-}{\text{OCH}_3}$ D. $\overset{\delta+}{\text{H}_3\text{C}}-\overset{\delta-}{\text{Br}}$ $\overset{\delta-}{\text{Na}}-\overset{\delta+}{\text{OCH}_3}$
E. $\overset{\delta+}{\text{H}_3\text{C}}-\overset{\delta+}{\text{Br}}$ $\overset{\delta-}{\text{Na}}-\overset{\delta-}{\text{OCH}_3}$

4- Which of the arrows correctly represents electron movement in the reaction of ethanoic acid (acetic acid) with methoxide ion?

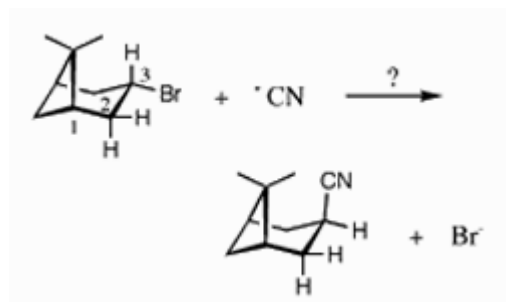




5- What product(s) would you expect from the following reaction?



6- What problem could you anticipate when attempting the following reaction? (Pinane ring numbering is shown.)



- A. Cyanide is too poor a nucleophile to displace a bromide ion.
- B. The hydrogen at C3 prevents the reaction from occurring.
- C. The hydrogens at C2 prevent the reaction from occurring.
- D. The product has the wrong stereochemistry at C3 for typical reaction of a 2° bromide.
- E. The geometry of the pinane ring prevents the backside attack required to obtain the product shown.

7- Which of the following would be the best (most reactive) nucleophile in a reaction with iodomethane (CH_3I)?

A. I^-

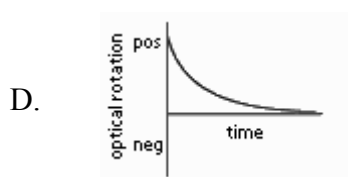
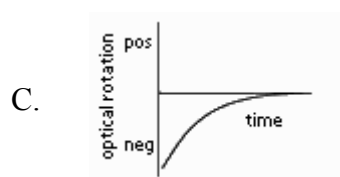
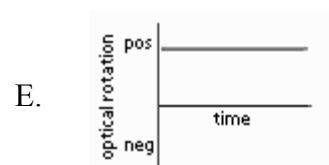
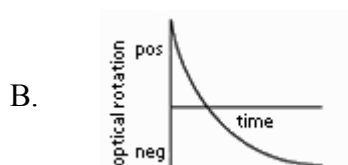
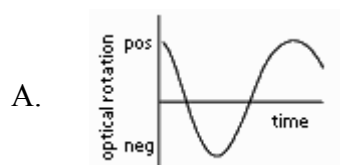
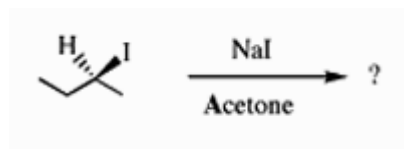
D. F^-

B. Br^-

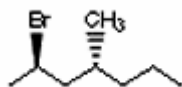
E. The type of nucleophile would make no difference in the rate of this reaction.

C. Cl^-

8- Iodide ion is rather unusual in that it is both a good nucleophile and a good leaving group. Which of the following graphs represents what you expect when (*S*)-(+)-2-iodobutane is treated with sodium iodide?



9- Provide an IUPAC name for the following molecule.



A. (2*R*, 4*R*)-2-bromo-4-methylheptane

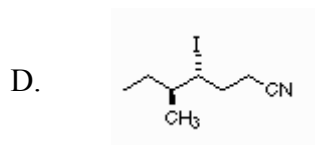
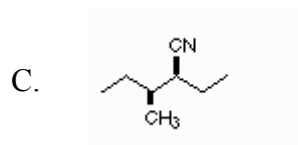
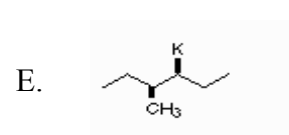
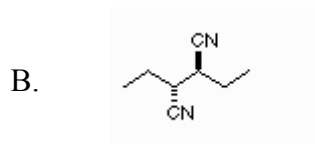
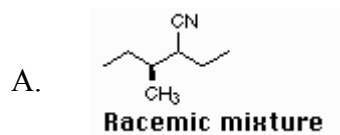
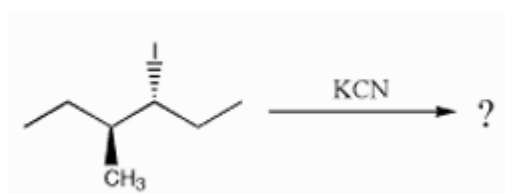
B. (2*R*, 4*R*)-4-methyl-2-bromoheptane

C. (4*R*, 6*R*)-6-bromo-4-methylheptane

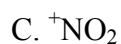
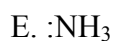
D. (4*S*, 6*R*)-6-bromo-4-methylheptane

E. (2*R*, 4*S*)-2-bromo-4-methylheptane

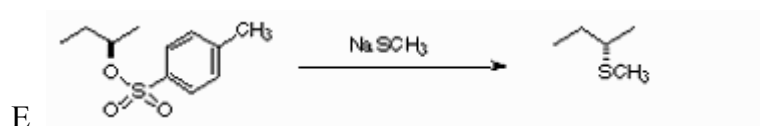
10- Predict the *major* product of the following reaction.



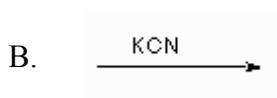
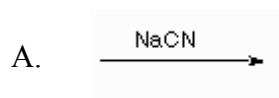
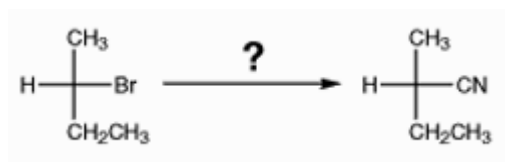
11- Which of the following is least likely to function as a nucleophile?



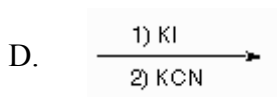
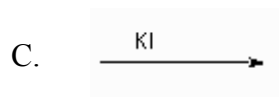
12- Which of the following reactions may proceed by an $\text{S}_{\text{N}}2$ mechanism?



13- What reaction conditions would be necessary to effect the following transformation?



E. This reaction cannot possibly take place!!!



14- The halogens are quite typically very useful leaving groups in the S_N2 reaction. Of the following, which is the best leaving group?

A. F^-

D. I^-

B. Cl^-

E. both B and C are equally correct

C. Br^-

15- Consider the following S_N2 reaction shown below. If the concentration of NaCN is quadrupled, what will happen to the rate of the reaction?



A. rate will be unaffected

B. rate will quadruple

C. rate will double

D. rate will be cut in half

E. rate will increase by a factor of 16