Dr. Starkey, CHM 3140 Organic Chem. I, Cal Poly Pomona
Chapter 7 Part 1 – Substitution Rxns (Ch 7 Worksheet #1)

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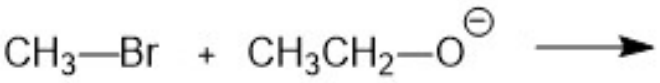
LAURIESTARKE263 to 37607

Which of the following is NOT associated with the S_N2 mechanism?

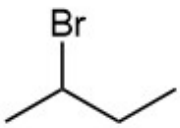
A) steric hindrance
B) inversion of stereochemistry
C) carbocation stability
D) one-step mechanism
E) back-side attack

1 Draw curved arrow(s) to show the S_N2 mechanism, and predict the major product.



2 Classify each halide:

a) primary b) secondary c) tertiary d) vinyl e) aryl f) methyl



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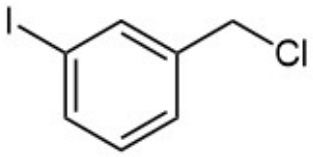
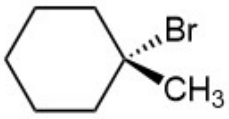


I _____

Cl _____



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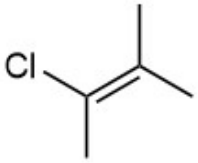

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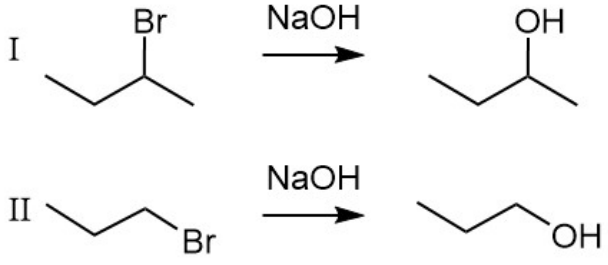
Show the expected major product when KCN reacts with:

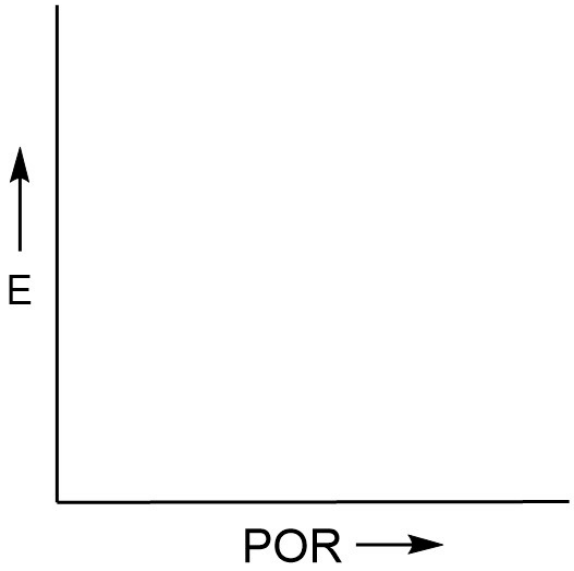
3 Chloroethane

4 (*R*)-3-iodohexane

5 Predict the major product.

6 Which of the following is the FASTER reaction? Explain briefly.





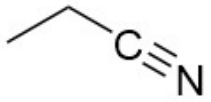
Draw the transition state for reaction I

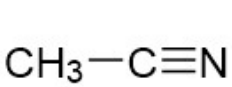
Draw the transition state for reaction II

7 Categorize each reagent as a **strong** nucleophile, a **weak** nucleophile, or **not** a nucleophile:

KCN	NaOMe	H_2O	KOH	$(CH_3)_2CHCH_2CH_3$
I^-	CH_3OH	NH_3	HCl	EtONa
$EtNH_2$	NaSH	CH_3CH_2OH	NH_4^+	iPrOH

3 Predict the major product formed when KCN is reacted with chloroethane.

A) 

C) 

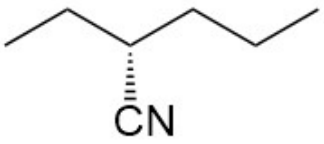
B) 

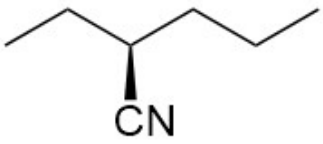
D) 

E) No Reaction

4

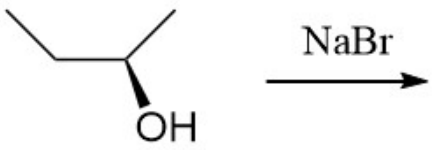
Predict the major product formed when KCN is reacted with (*R*)-3-iodohexane.

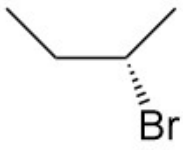
A) 

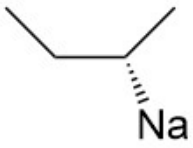
B) 

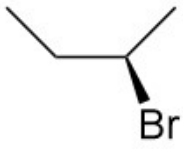
C) No Reaction

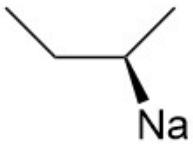
5 Predict the major product.



A) 

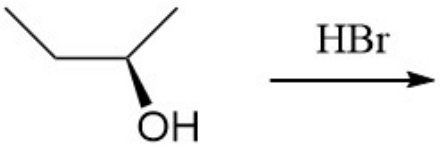
C) 

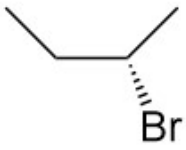
B) 

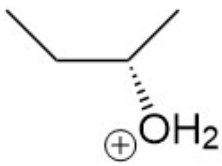
D) 

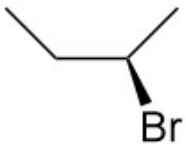
E) No Reaction

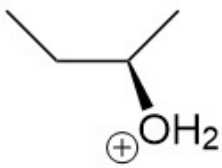
Predict the major product.



A) 

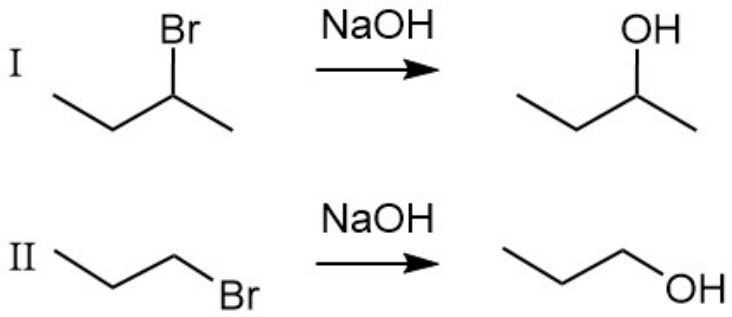
C) 

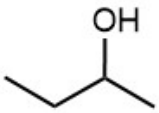
B) 

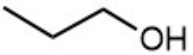
D) 

E) No Reaction

6 Which of the following is the FASTER reaction? Explain briefly.



A) I is faster because this is more stable: 

B) II is faster because this is more stable: 

C) I is faster because Br^- is a good leaving group.

D) II is faster because RBr has less sterics

E) Neither reaction should be faster.