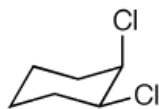


Organic Chemistry II CHM 3150
Dr. Laurie S. Starkey, Cal Poly Pomona
Final Exam Review (Ch. 1-22) – [Practice Problems](#)

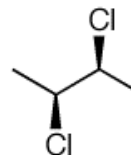
For clicker question voting, go to:
<https://pollev.com/lauriestarke263>



1 Is the following molecule chiral? Does it have an enantiomer?

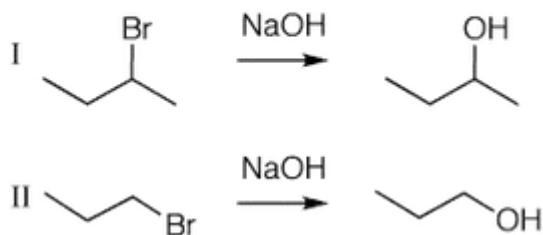


Is the following molecule optically active?
Does it have an enantiomer?



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

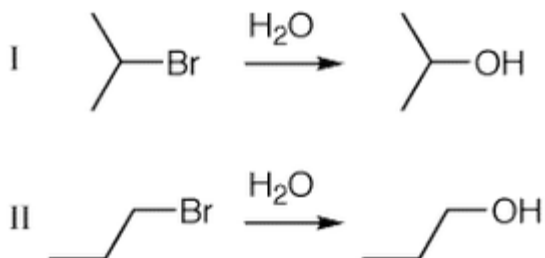
2



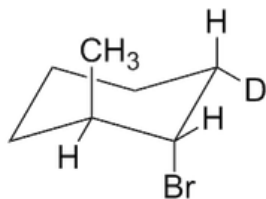
Of the following compounds, which has the fastest S_N1 reaction rate with H_2O in acetone?

- A)
- B)
- C)
- D)
- E)

3

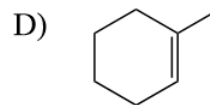
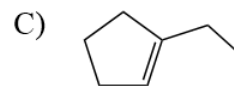
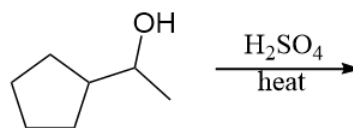


4



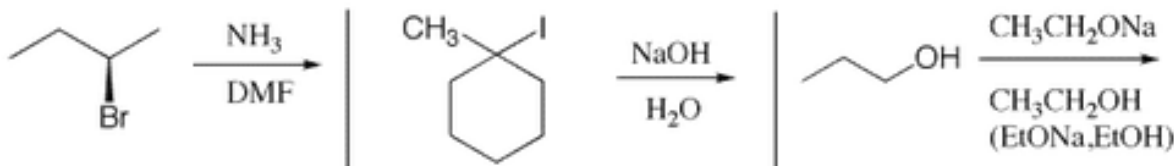
What is the major product of an E2 reaction of the compound shown above?

Which of the following is the LEAST likely to be isolated as a product in the reaction shown?



Predict the major products for the following reactions.

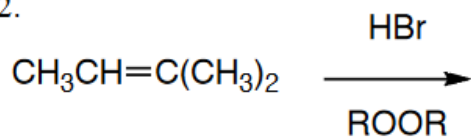
5



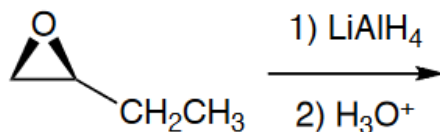
Predict the major product(s) and describe the stereochemistry of the product(s) as:

(taken from Stereochemistry practice problems)

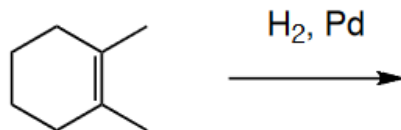
2.



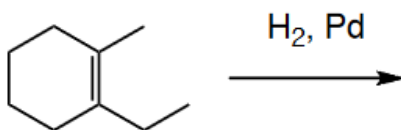
3.



4.



5.



A) a single enantiomer

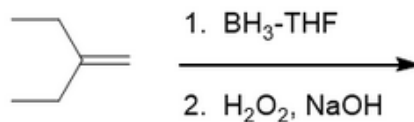
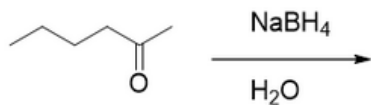
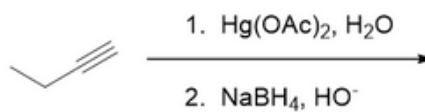
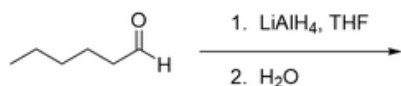
B) a racemate

C) a meso compound

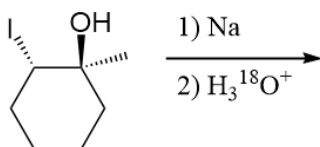
D) an achiral product, but not meso

E) a mixture of diastereomers

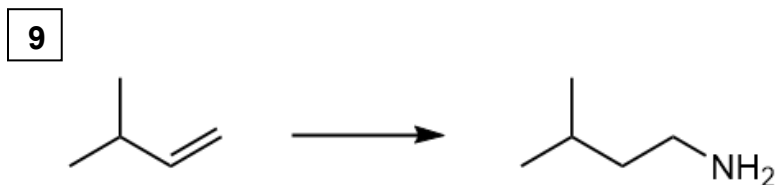
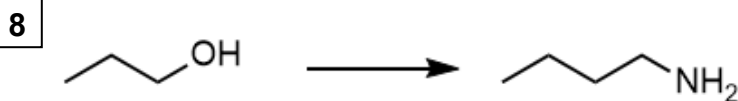
6 Which of the following reactions gives an alcohol product that is formed as a racemic mixture?



7 Predict the major product



Which reagents would be best to achieve the following synthesis?



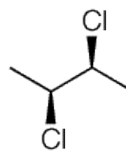
Is the following molecule chiral? Does it have an enantiomer?

1



- A) It is chiral and it does have an enantiomer.
- B) It is NOT chiral but it does have an enantiomer.
- C) It is chiral but it does NOT have an enantiomer.
- D) It is NOT chiral and it does NOT have an enantiomer.

Is the following molecule optically active?
Does it have an enantiomer?

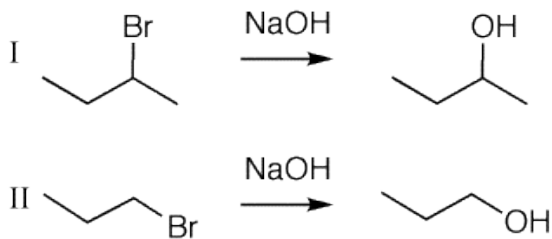


- A) It is optically active and it does have an enantiomer.
- B) It is NOT optically active but it does have an enantiomer.
- C) It is optically active but it does NOT have an enantiomer.
- D) It is NOT optically active and it does NOT have an enantiomer.

Configuration? A) 1R, 2R B) 1S, 2S
C) 1R, 2S D) 1S, 2R

2

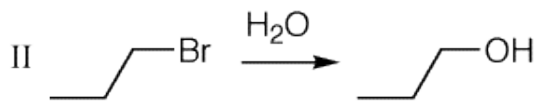
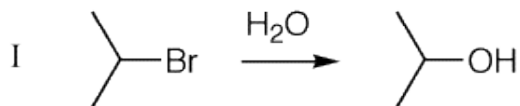
Which of the following is the FASTER reaction? Explain briefly.




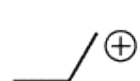
- A) I is faster because this is more stable:
- B) II is faster because this is more stable:
- C) I is faster because this is more stable:
- D) II is faster because *n*-PrBr has less sterics
- E) I is faster because *sec*-BuBr has less sterics

3

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



A) I is faster because this is more stable: 

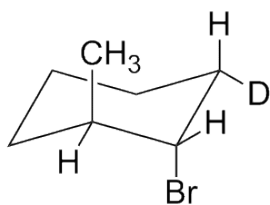
B) II is faster because this is less stable: 

C) I is faster because LG is allylic

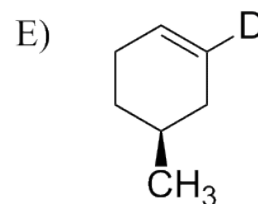
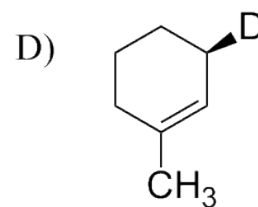
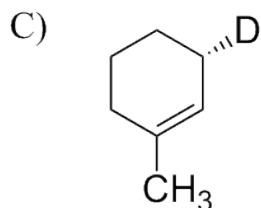
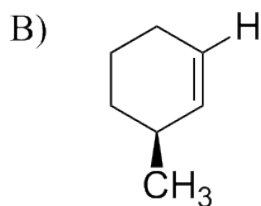
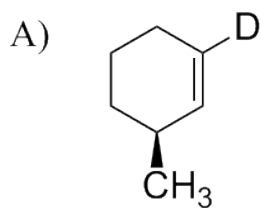
D) II is faster because LG has less sterics

E) neither reaction should be faster

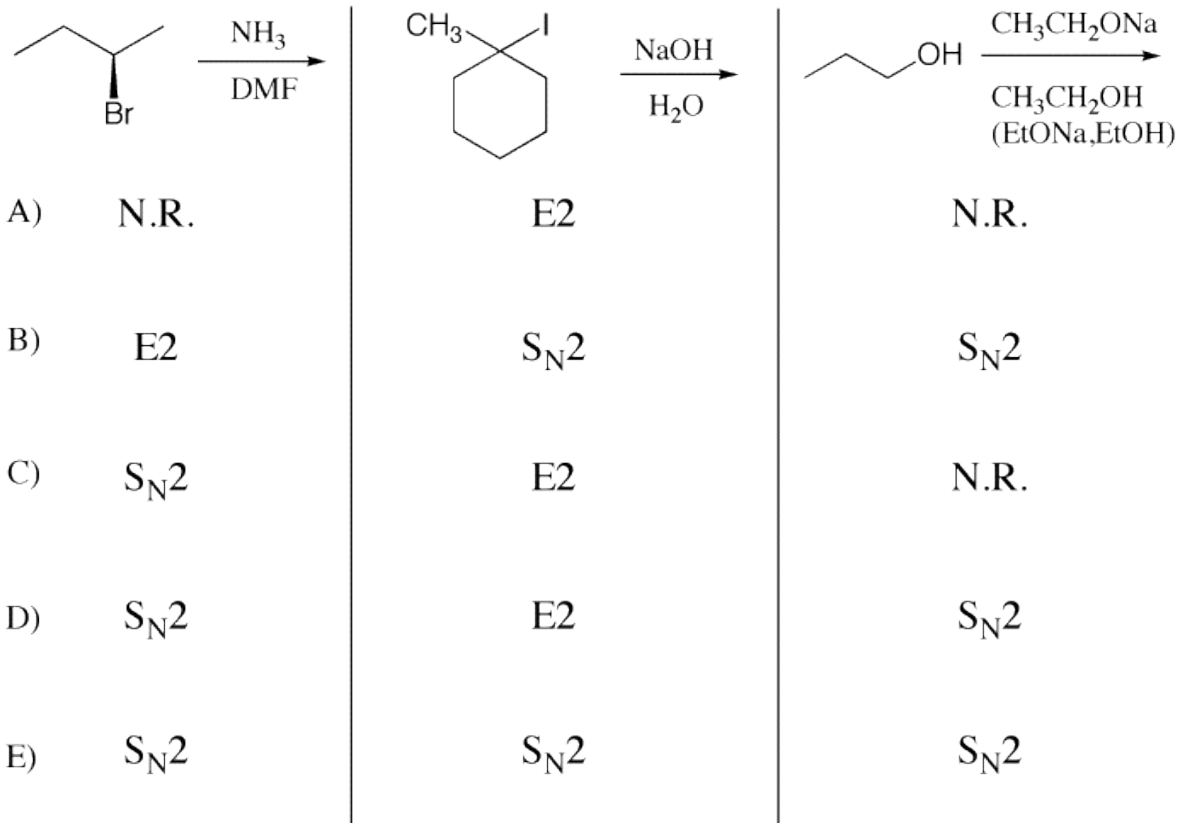
4



What is the major product of an E2 reaction of the compound shown above?

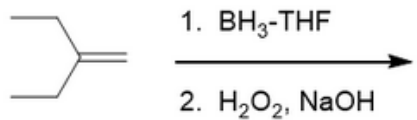
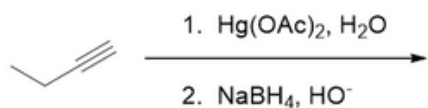
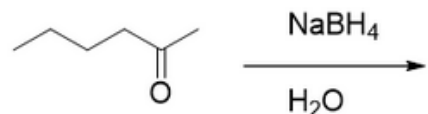
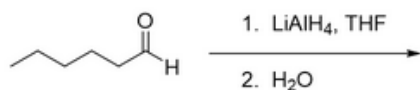


Predict the major products for the following reactions.



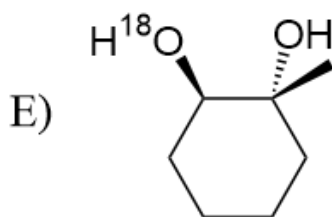
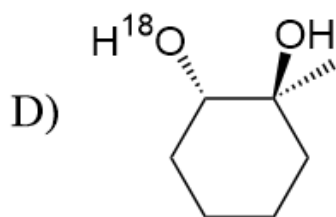
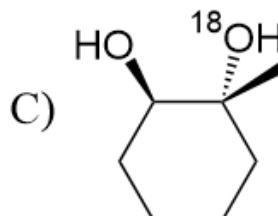
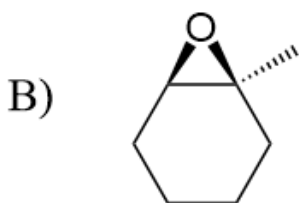
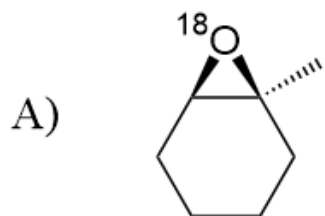
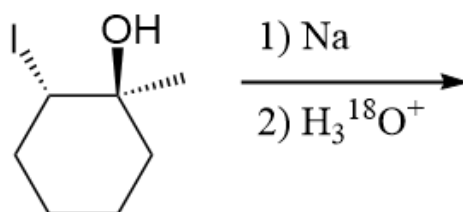
Which of the following reactions gives an alcohol product that is formed as a racemic mixture?

6



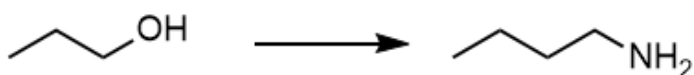
7

Predict the major product.



8

Select the BEST reagents for the transformation of the given starting material into the desired product.



- A) 1) $\text{Na}_2\text{Cr}_2\text{O}_7, \text{H}_2\text{SO}_4$
 2) SOCl_2
 3) NH_3 (xs)
 4) LiAlH_4 (+ aq. workup)

- B) 1) TMSCl , pyridine
 2) NaCN
 3) LiAlH_4 (+ aq. workup)

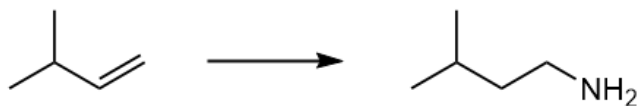
- C) 1) TsCl , pyridine
 2) NaCN
 3) LiAlH_4 (+ aq. workup)

- D) 1) TsCl , pyridine
 2) NaN_3
 3) LiAlH_4 (+ aq. workup)

- E) 1) TMSCl , pyridine
 2) NaN_3
 3) LiAlH_4 (+ aq. workup)

9

Provide the reagents necessary to transform the given starting material into the desired product.

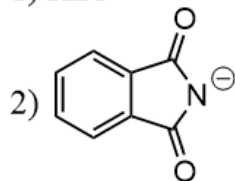


A) 1) HBr
2) NH₃

B) 1) HBr
2) NaN₃
3) LiAlH₄ (+ workup)

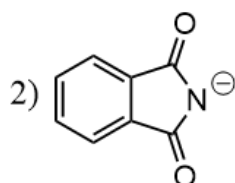
C) 1) NBS, heat
2) NaN₃
3) LiAlH₄ (+ workup)

D) 1) HBr



3) NH₂NH₂

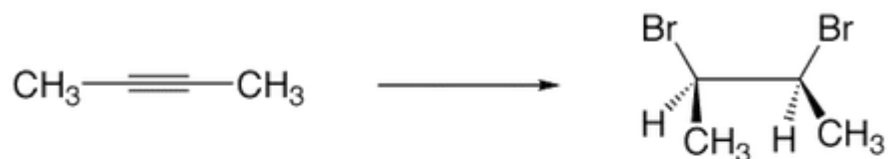
E) 1) HBr, ROOR



3) NH₂NH₂

10

Which reagents would be best to achieve the following synthesis?



A) 1) Br₂
2) H₂, Lindlar's catalyst

C) 1) H₂, Lindlar's catalyst
2) Br₂

B) 1) Br₂
2) Na, NH₃

D) 1) Na, NH₃
2) Br₂

E) HBr (excess)