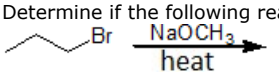
Description / Instructions: Kapittel 6, 7 og 8

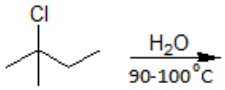
1. GO Tutorial: Determining E1 vs E2 1.1

Determine if the following reaction is E1 or E2.



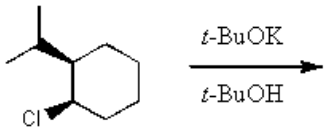
2. GO Tutorial: Determining E1 vs E2 1.2

Determine if the following reaction is E1 or E2.



3. Testbank Question 115

The product(s) for the following reaction would mainly be dictated by which mechanism?

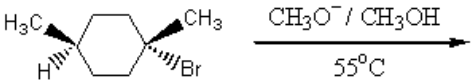


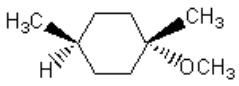
a. S_N1
b. S_N2
c. E1
d. E2
e. None of these choices.

Answer: _____

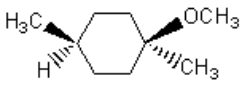
4. Testbank Question 118

What would be the major product(s) of the following reaction?

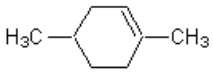




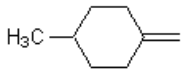
I



II



III



IV

a. I
b. II
c. III and IV
d. I and II
e. All of these choices.

Answer: _____

5. Problem 7.26g

Write a structural formula for (*Z*,4*R*)-4-methyl-2-hexene (show stereochemistry as needed).

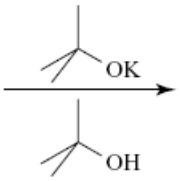
6. Problem 7.30

Outline a synthesis of propene from each of the following:

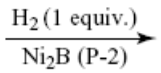
(a) Propyl chloride

Propyl chloride propene

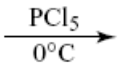
a.



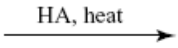
b.



c.



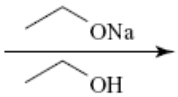
d.



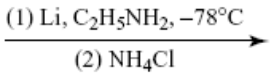
Answer: _____

(b) Isopropyl chloride

a.

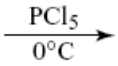


b.



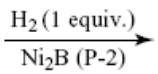
Isopropyl chloride

c.



propene

d.



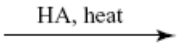
Answer: _____

(c) Propyl alcohol

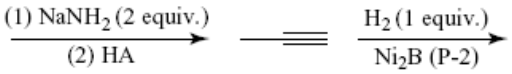
Propyl alcohol

propene

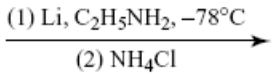
a.



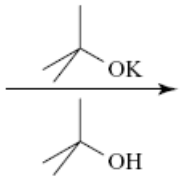
b.



c.



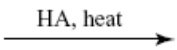
d.



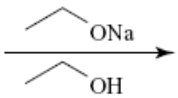
Answer: _____

(d) Isopropyl alcohol

a.

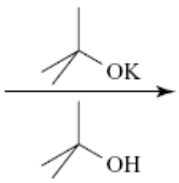


b.



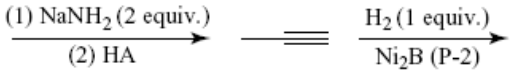
c.

Isopropyl alcohol



propene

d.



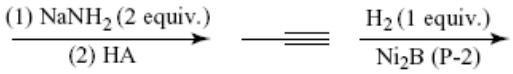
Answer: _____

(e) 1,2-Dibromopropane

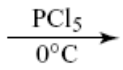
1,2-Dibromopropane

propene

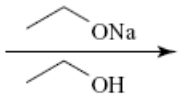
a.



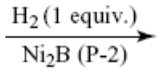
b.



c.



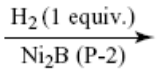
d.



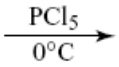
Answer: _____

(f) Propyne

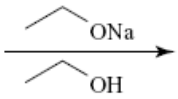
a.



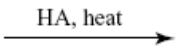
b.



Propyne c. propene



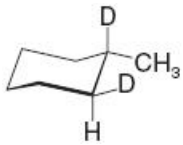
d.



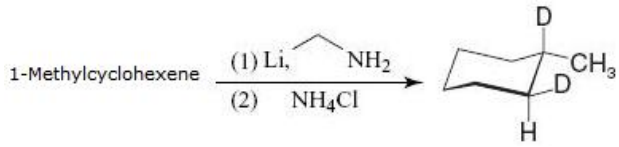
Answer: _____

7. Problem 7.33

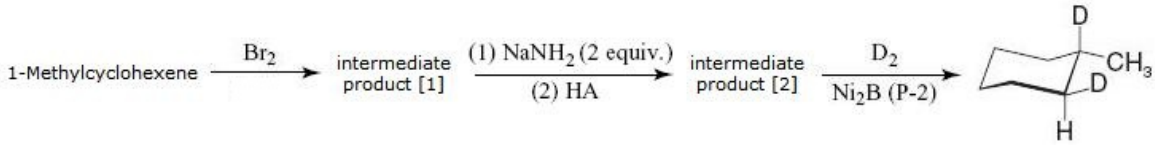
Starting with 1-methylcyclohexene and using any other needed reagents, outline a synthesis of the following deuterium-labeled compound:



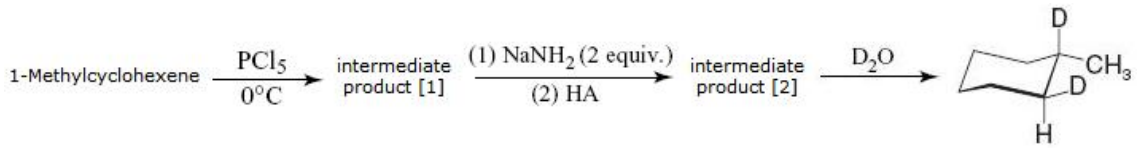
a.



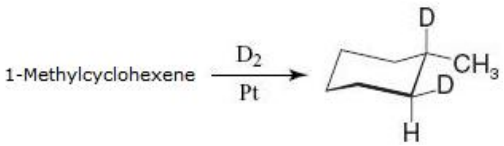
b.



c.



d.

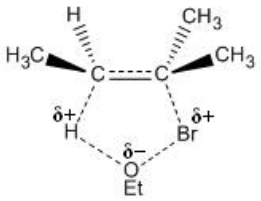


Answer: _____

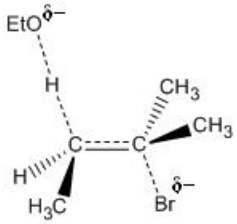
8. Problem 7.35

Select a three-dimensional representation for the transition state structure leading to formation of 2-methyl-2-butene from reaction of 2-bromo-2-methylbutane with sodium ethoxide.

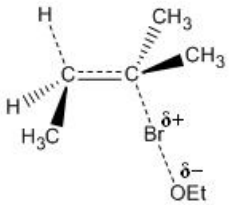
a.



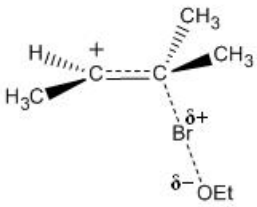
b.



c.



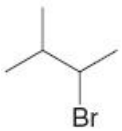
d.



Answer: _____

9. Problem 7.37a

Draw the major and minor product when the following alkyl halide is heated with sodium ethoxide in ethanol. You may neglect cis-trans isomerism of the products when answering this question. If there is only one product, click "No Reaction" for the minor product.



The major product is:

The minor product is:

a. No reaction

Answer: _____

10. Problem 7.39a

Starting with an appropriate alkyl halide and base, outline the synthesis that would yield the following alkene as the major (or only) product.

Draw the alkyl halide reactant.

Select the proper base:

a. $\xrightarrow[EtOH]{KOH}$

b. $\xrightarrow[liq.\ NH_3]{NaNH_2}$

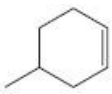
c. $\xrightarrow[(CH_3)_3COH]{(CH_3)_3COK}$

d. $\xrightarrow{H_2O}$

Answer: _____

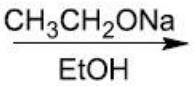
11. Problem 7.39d

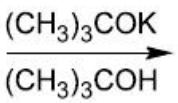
Starting with an appropriate alkyl halide and base, outline the synthesis that would yield the following alkene as the only product.

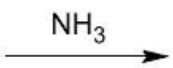


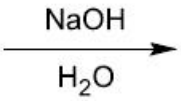
Draw the alkyl halide reactant.

Select the proper base:

a. 

b. 

c. 

d. 

Answer: _____

12. Challenge Problem 7.55

What is the index of hydrogen deficiency for **(a)** $C_7H_{10}O_2$ and **(b)** $C_5H_4N_4$?

(a)

(b)

13. Testbank Question 79

A compound X with the formula C_7H_{10} undergoes catalytic hydrogenation to produce a compound Y with the formula C_7H_{14}. What could be true of X?

a. X might have one triple bond and one ring.
b. X might have two double bonds and one ring.
c. X might have one double bond and two rings.
d. X might have one double bond and one triple bond.
e. More than one of these choices.

Answer: _____

14. Learning Group Problem 7.3

(a) Write the structure of the major product formed when 1-methylcyclohexanol reacts with 85% (concd) H_3PO_4 at 150°C.

(b) Write the mechanism for step one of this reaction. Show lone pairs and formal charges. Only the acidic hydrogen should be drawn out with a covalent bond.

(c) Write the mechanism for step two of this reaction. Show lone pairs and formal charges. In this step, you don't need to draw out any hydrogen.

(d) Write the mechanism for step three of this reaction. Show lone pairs and formal charges. In this step, make sure to draw out the hydrogen that will be eliminated. Use the conjugate base generated in step 1 of the mechanism for the base in this step.

15. Problem 8.26a

Draw the structural formula(s) for the product(s) obtained when 1-butene reacts with HI.

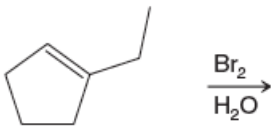
16. Problem 8.26i

Draw the structural formula(s) for the product(s) obtained when 1-butene reacts with HCl.

17. Problem 8.28b

Write structure(s) for the major organic product(s) from the following reaction. Show both stereoisomers if needed.

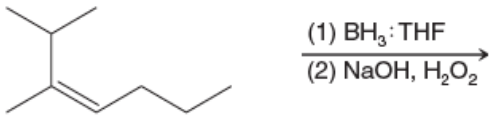
(b)



18. Problem 8.28c

Write structure(s) for the major organic products from the following reactions. Show both stereoisomers where applicable.

(c)



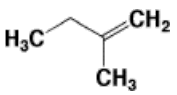
19. Problem 8.29f

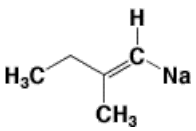
Select the structural formula(s) for the product(s) obtained when 1-butyne reacts with $NaNH_2$, then CH_3I.

Note: not all products may be shown.

a. $CH_3CH_2-C\equiv C-CH_3$

b. $CH_3-C\equiv C-CH_3$

c. 

d. 

e. $CH_3CH_2-C\equiv C-H$

Answer: _____

20. Problem 8.32a

Choose the correct reactants to synthesize 1-butyne from 1-butene.

a. 1.) *t*-BuOK, *t*-BuOH, Heat
   2.) 2 $NaNH_2$, mineral oil, heat

b. 1.) Br_2.) 3 $NaNH_2$, mineral oil, heat
   3.) NH_4Cl

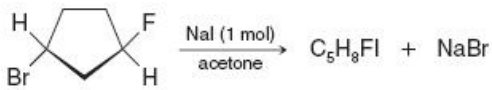
c. 1.) BH_3: THF
   2.) H_2O_2, OH^-

d. 1.) HBr (no peroxides)
   2.) Cl_2, H_2O
   3.) $NaNH_2$, mineral oil, heat

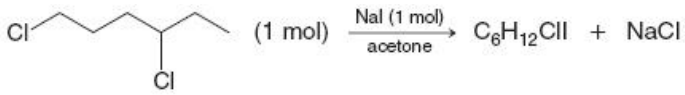
Answer: _____

21. Problem 6.41

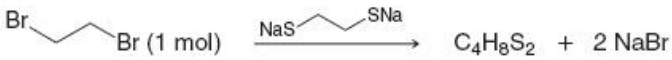
Give structures of the organic product for each of the following reactions:



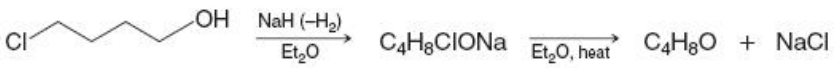
Draw the organic product from the above reaction.



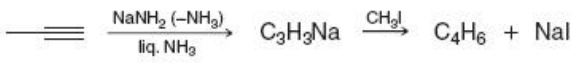
Draw the organic product from the above reaction.



Draw the organic product from the above reaction.



Draw the organic product from the above reaction.



Draw the organic product from the above reaction.