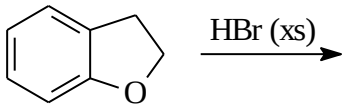
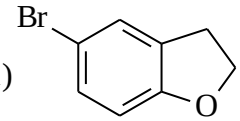
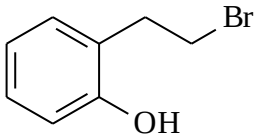
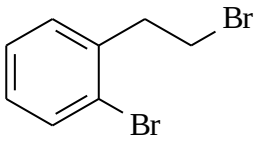
# CHAPTER 12: Alcohols and Ethers

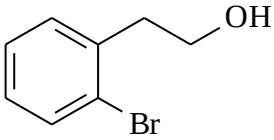
1 What is the product of the following reaction?




1) 


3) 


2) 


4) 


2 Which of the following is <u>not</u> a good method to make *tert*-butyl methyl ether?

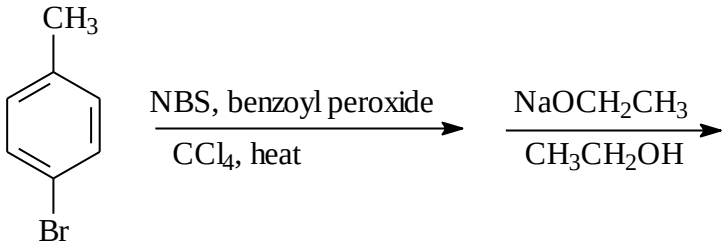
1) $(CH_3)_3CO^-Na^+ + CH_3Br \longrightarrow$

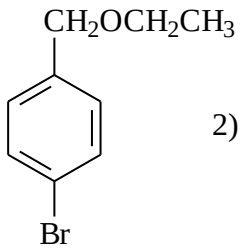
2) $(CH_3)_3CBr + CH_3O^-Na^+ \longrightarrow$

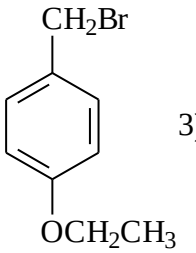
3) $H_2C{=}C(CH_3)_2 + CH_3OH \xrightarrow{H^+}$

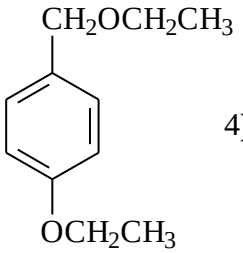
4) $(CH_3)_3CBr + CH_3OH \xrightarrow{heat}$

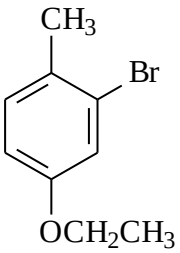
4 What is the major product of the following reaction?



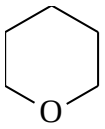

1) 

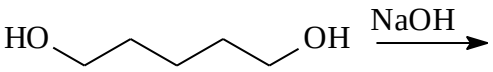

2) 

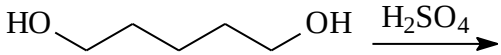

3) 

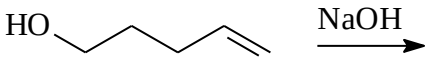

4) 

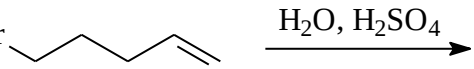
5 Which one of the following reactions makes the cyclic ether shown below?



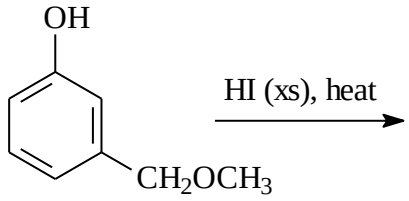

1) 

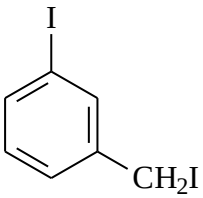

2) 


3) 

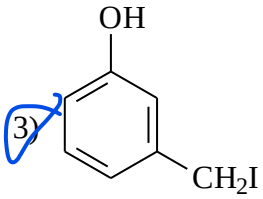

4) 


6 What are the products of the reaction below?

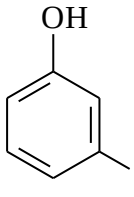



1) 

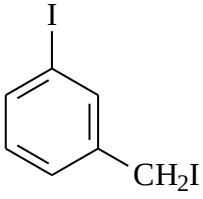
+ $CH_3OH$

3) 

+ $CH_3I$

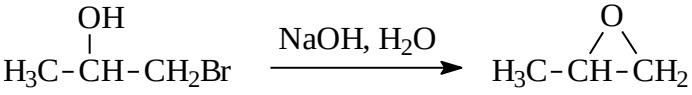
2) 

+ $CH_3I$

4) 

+ $CH_3I$

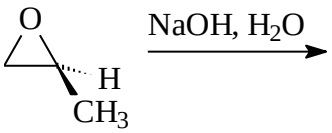
7 The reaction shown below can be described as an:




1) acid-base reaction followed by an intramolecular Williamson ether synthesis.

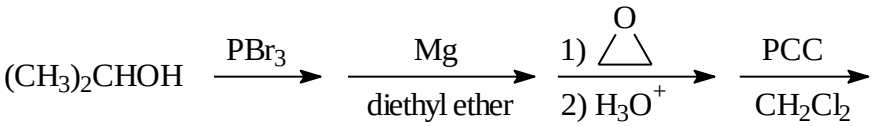
2) acid-base reaction followed by an intramolecular $S_N1$ reaction.
3) E2 reaction followed by an addition reaction to a double bond.
4) $S_N2$ reaction followed by an intramolecular Williamson ether synthesis.

8 What is the product of the following reaction?




1) (S)-1,2-propanediol 3) racemic mixture of 1,2-propanediol
2) (R)-1,2-propanediol 4) 1,3-propanediol

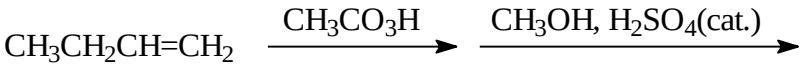
9 What is the final product of the following sequence of reactions?




1) $(CH_3)_2CHOCH_2CH_2OH$ 3) $(CH_3)_2CHCH_2CHO$

2) $(CH_3)_2CHC(=O)CH_3$ 4) $(CH_3)_2CHCH_2CO_2H$

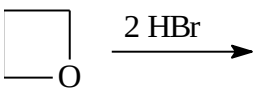
10 What is the product of the reactions below?




1) $CH_3CH_2CH(OH)CH_2OCH_3$ 3) $CH_3CH_2CH(OH)CH_2OH$

2) $CH_3CH_2CH(OCH_3)CH_2OH$ 4) $CH_3CH_2CH(CH_3)CH_2OH$

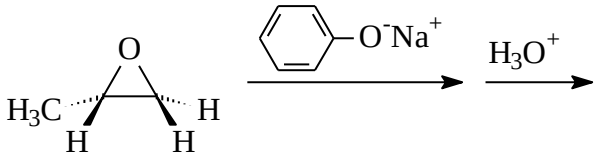
11 What is the product of the following reaction?

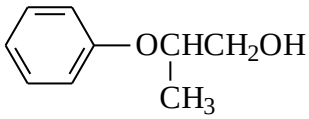


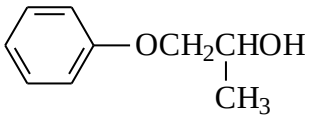

1) 1,3-dibromobutane 3) 1,4-dibromobutane

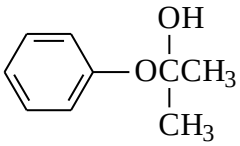
2) 1,3-dibromopropane 4) 1,2-dibromopropane

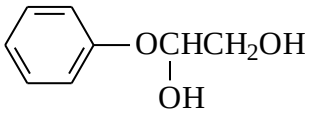
12 What is(are) the product(s) of the following nucleophilic ring-opening reaction?




1) 


3) 

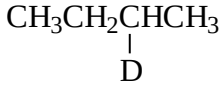

2) 

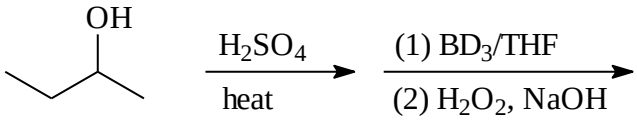

4) 

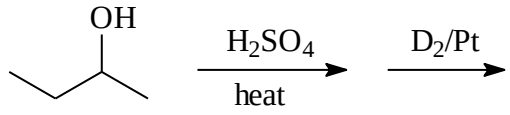

13 Select the strongest base in the following.

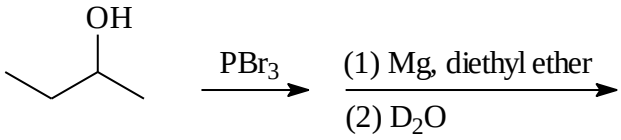
1) $NaNH_2$ 2) $CH_3Li$ 3) $NaOCH_2CH_3$ 4) $HC{\equiv}CNa$

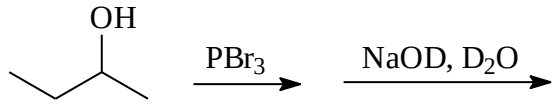
14 Which of the following reaction sequences would convert 2-butanol into the deuterated compound below?



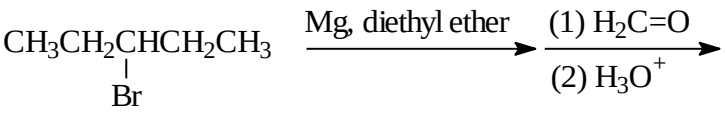

1) 


2) 


3) 

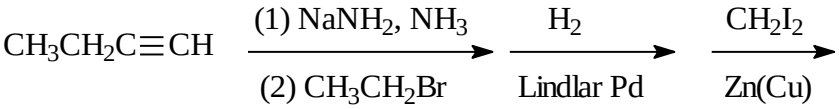

4) 


15 What is the major product of the following reaction?



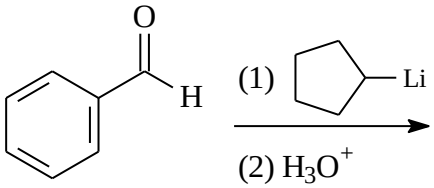

1) 2-ethyl-1-pentanol 2) 2-ethyl-1-butanol 3) 3-pentanol 4) 3-methyl-1-pentanol

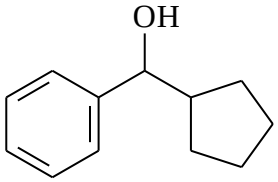
16 What is the product of the following sequence of reactions?




1) 1,1-diethylcyclopropane
2) *trans*-1,2-diethylcyclopropane
3) *cis*-1,2-diethylcyclopropane
4) *cis* and *trans*-1,1-diiodo-2,3-diethylcyclopropane

17 What is the product of the following reaction?




1)
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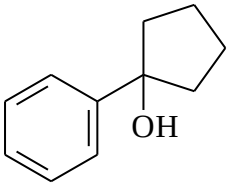


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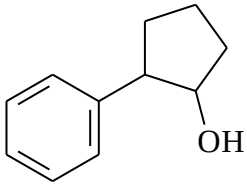


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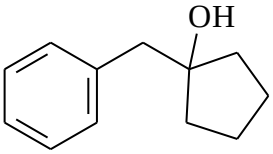
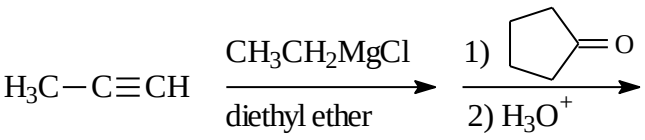
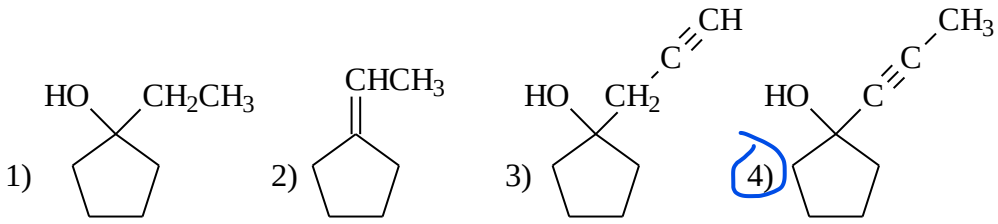



18 Which of the following is the major organic product in the reaction sequence below?






Propose a plan for the following synthesis (choose necessary reagents)