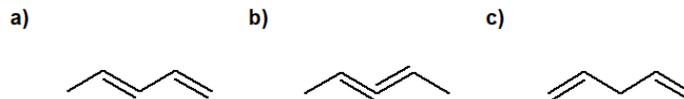


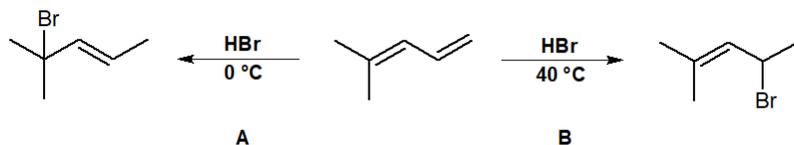
## 16.12: ADDITIONAL EXERCISES

### General Review

16-1 Identify which of the following dienes are isolated, conjugated, or cumulated.



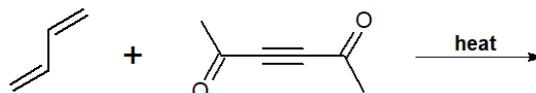
16-2 Identify which pathway gives the thermodynamic or the kinetic product and provide a reason for your answer.



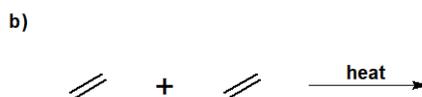
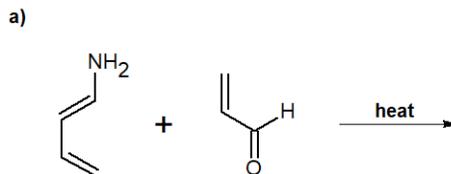
16-3 Draw the resonance structures of the following molecule.



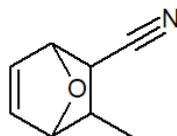
16-4 Provide the final product of the following reaction.



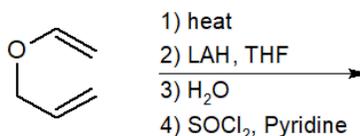
16-5 Predict the final product for the following reactions.



16-6 For the following compound, predict which bonds could be broken to give the most probable Diels-Alder dienes that reacted to make the compound. Provide the resulting dienes from the prediction.



16-7 Give the final product of the following reaction chain..



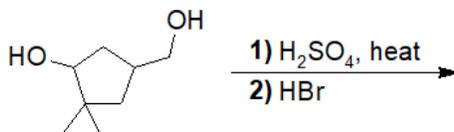
### 1,2- and 1,4-Addition to Conjugated Dienes

16-8 Predict all possible products of the following reaction.



16-9 Identify the kinetic and thermodynamic products of the previous problem, 16-8.

16-10 Predict the kinetic product(s) of the following reaction and provide proper IUPAC nomenclature.

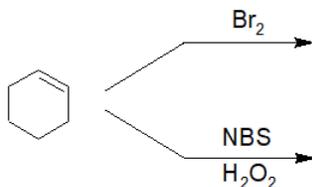


### Allylic Radicals

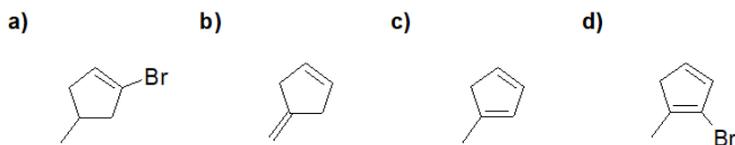
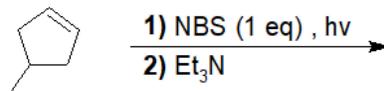
16-11 Draw arrows to show the movement of electrons in the following allylic radical.



16-12 Show the products of the following reactions.

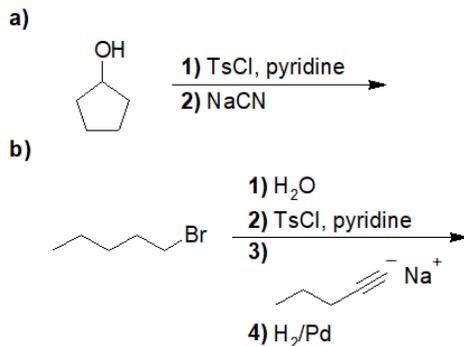


16-13 Choose the correct answer of the following reaction.

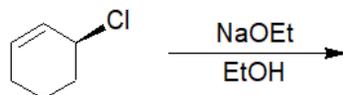


### $\text{S}_{\text{N}}2$ Displacement Reactions of Allylic Halides and Tosylates

16-14 Predict the products of the following reactions.

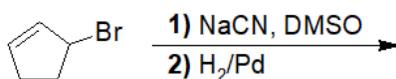


16-15 Choose the correct IUPAC nomenclature of the product of the following reaction and provide its structure.



- a) (3R)-3-ethoxycyclohex-1-ene
- b) (3S)-3-ethoxycyclohex-1-ene
- c) ethoxycyclohexane
- d) cyclohexa-1,3-diene

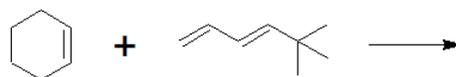
16-16 Predict the product of the following reaction.



**Diels-Alder Reactions**

16-17 Predict the products of the following Diels-Alder reactions.

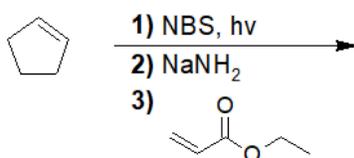
a)



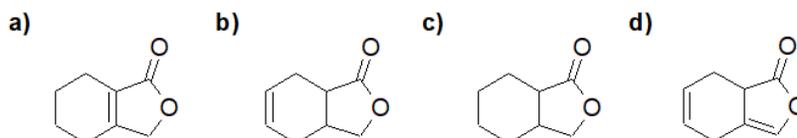
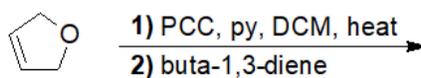
b)



16-18 Predict the product of the following reaction.



16-19 Choose the correct answer.



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