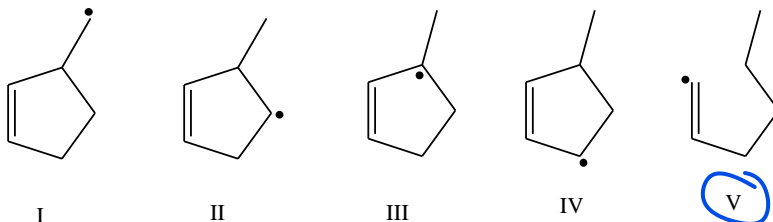
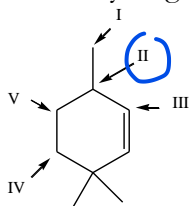


### Chapter 13: Honor Assignment 4

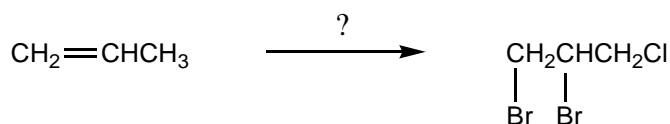
1. Which free radical would be least stable?



2. Which hydrogen atom(s) of is/are most susceptible to abstraction by free radicals?



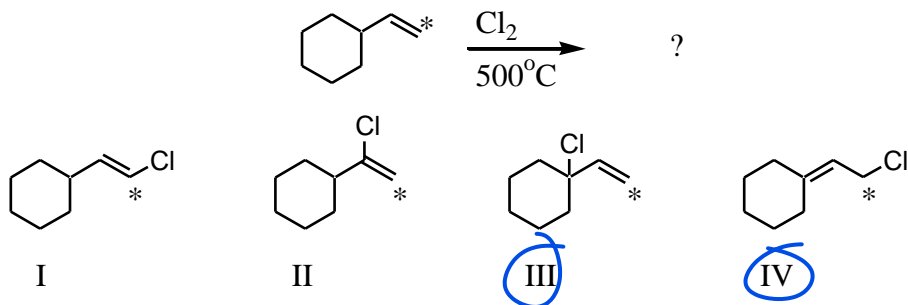
3. Which would be the best synthesis?



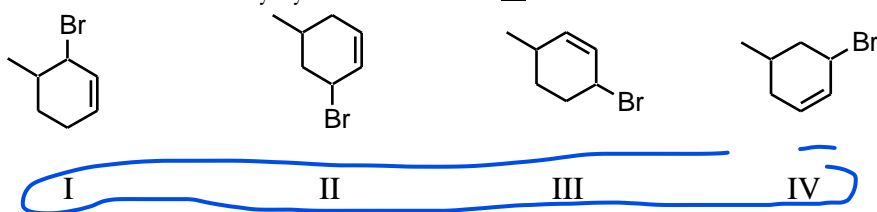
- A) Propene  $\xrightarrow{\text{Br}_2, \text{CCl}_4}$   $\xrightarrow{\text{Cl}_2, h\nu}$
- ☒ B) Propene  $\xrightarrow{\text{Cl}_2, 400^\circ\text{C}}$   $\xrightarrow{\text{Br}_2, \text{CCl}_4}$
- C) Propene  $\xrightarrow{\text{HCl}}$   $\xrightarrow{\text{Br}_2, h\nu}$
- D) Propene  $\xrightarrow{\text{NBS}, \text{CCl}_4}$   $\xrightarrow{\text{Cl}_2, \text{CCl}_4}$
- E) Propene  $\xrightarrow{\text{Cl}_2, \text{CCl}_4}$   $\xrightarrow{\text{NBS}, \text{CCl}_4}$

Ans:

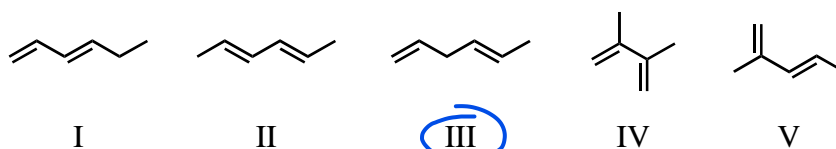
4. What product(s) would you expect from the following substitution reaction?



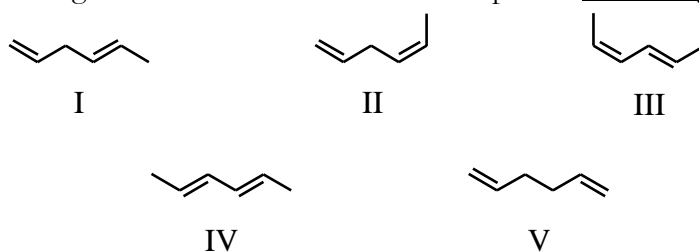
5. Treatment of 4-methylcyclohexene with N-bromosuccinimide in  $\text{CCl}_4$  would yield mainly:



6. Which diene would be least stable?

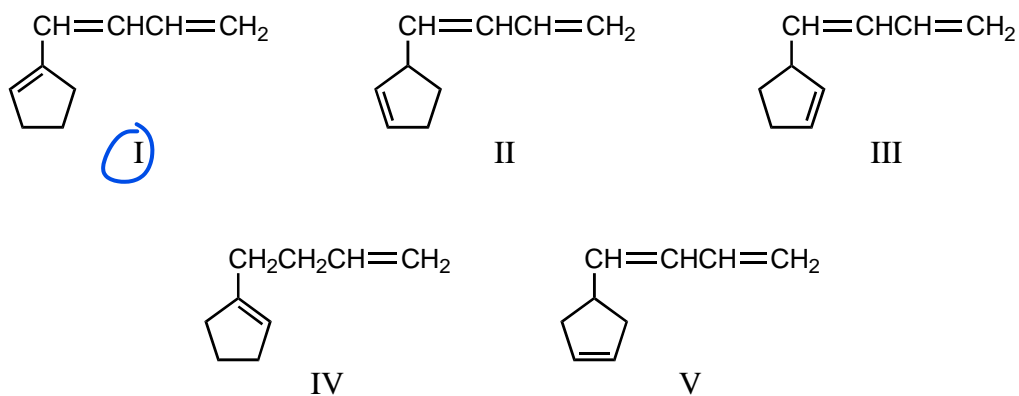


7. Arrange these hexadienes in order of expected decreasing stability.

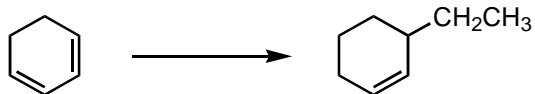


- A)  $V > II > I > III > IV$   
 B)  $III > IV > II > I > V$   
 C)  $IV > III > II > V > I$   
**D)  $IV > III > I > II > V$**   
 E)  $I > II > IV > III > V$

8. Which compound would have a UV absorption band at longest wavelength?



9. How could the following synthesis be carried out?



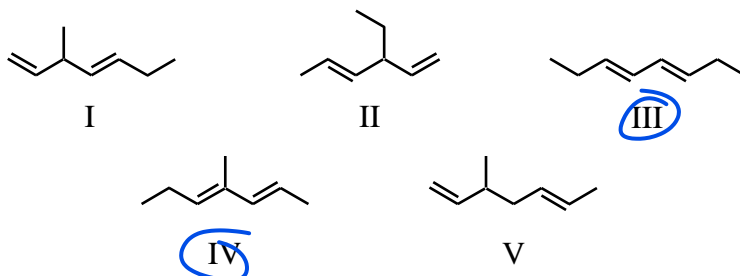
- A) (1) Br<sub>2</sub>/CCl<sub>4</sub>; (2) CH<sub>3</sub>CH<sub>2</sub>MgCl, ether; (3) CH<sub>3</sub>ONa/CH<sub>3</sub>OH  
 B) (1) HBr, 80°C; (2) (CH<sub>3</sub>CH<sub>2</sub>)<sub>2</sub>CuLi, ether  
 C) (1) HBr, 80°C; (2) Mg, ether; (3) CH<sub>3</sub>CH<sub>2</sub>OH, then H<sub>3</sub>O<sup>+</sup>  
 D) More than one of the above  
 E) All of the above

10. Which of these dienes can undergo the Diels-Alder reaction?

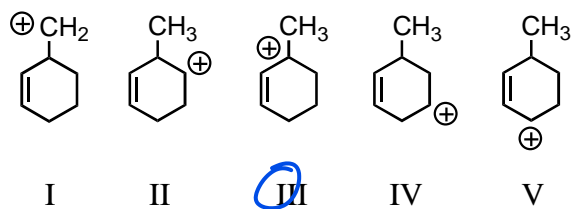
- A)   
 B)   
 C)   
 D)

E) All of the above can undergo the Diels-Alder reaction.

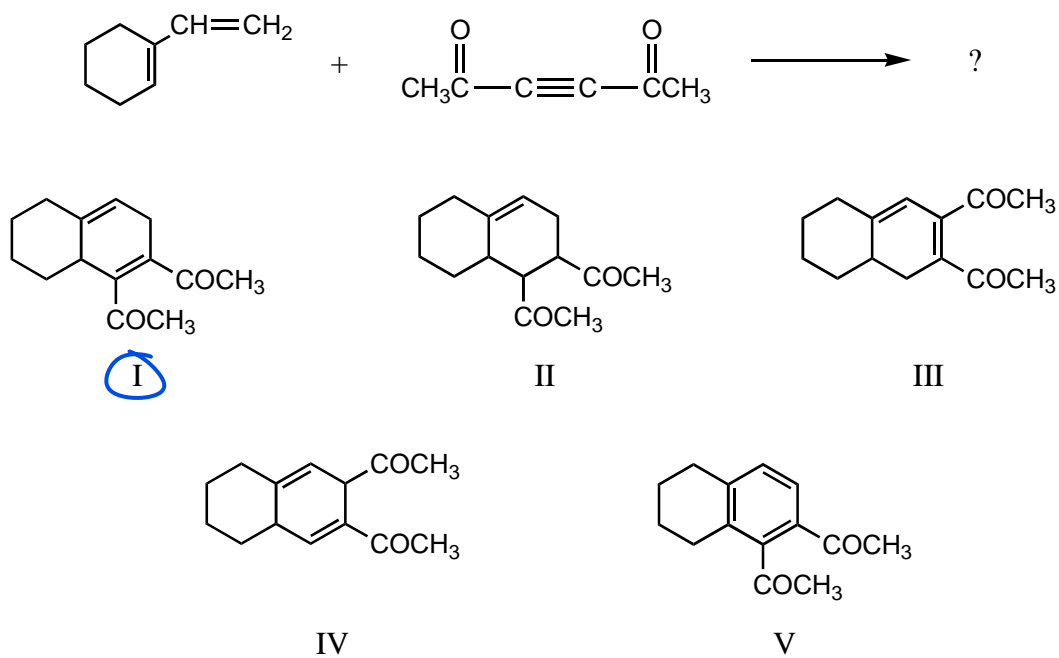
11. Which of the following can undergo the Diels Alder reaction?



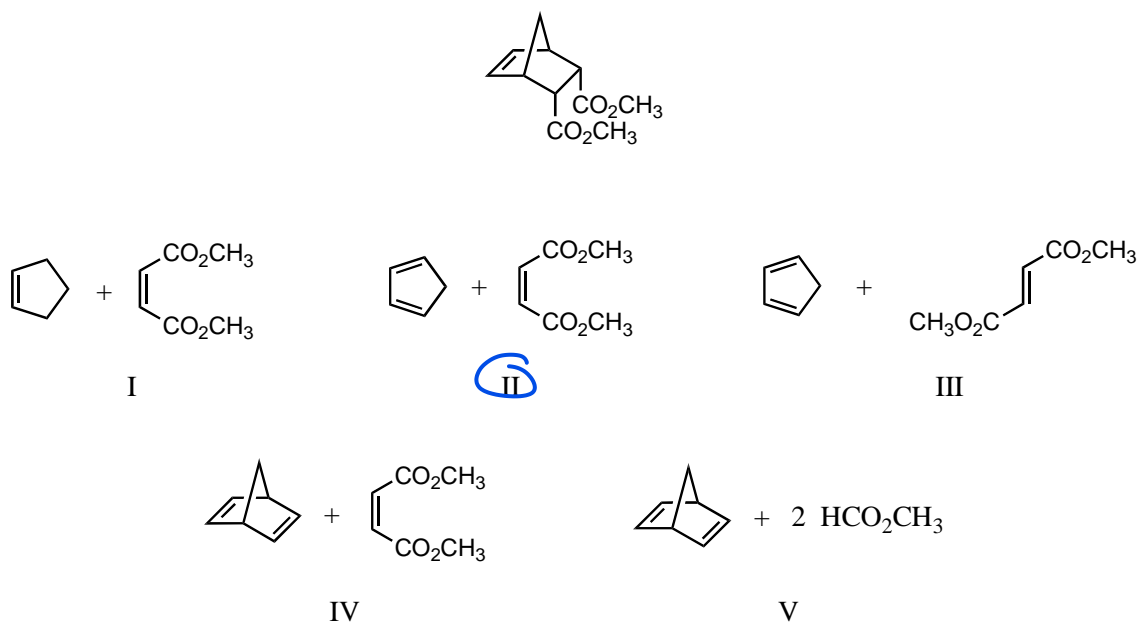
1. Which carbocation would be most stable?  
 2.



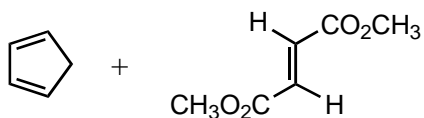
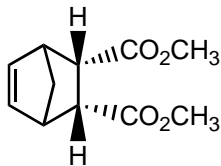
13. What is the product of the following reaction?



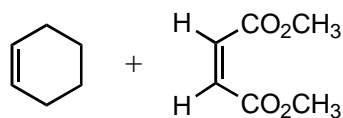
14. Which would be the best synthesis of the following compound?



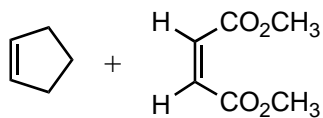
15. Which reaction would produce the following compound?



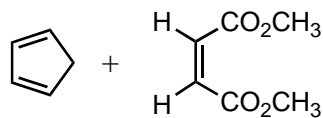
I



II



III



IV

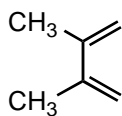
16. Which diene would you expect to react most rapidly with maleic anhydride?



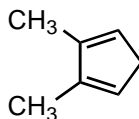
I



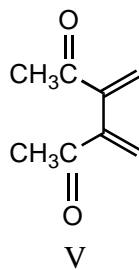
II



III

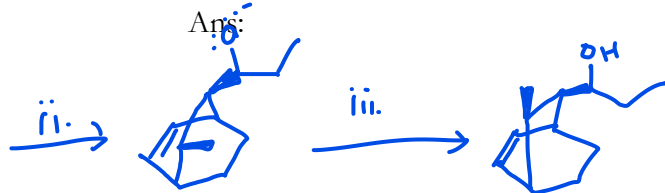
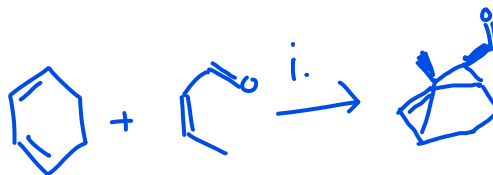
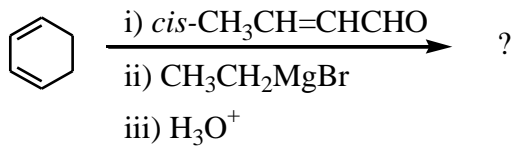


IV

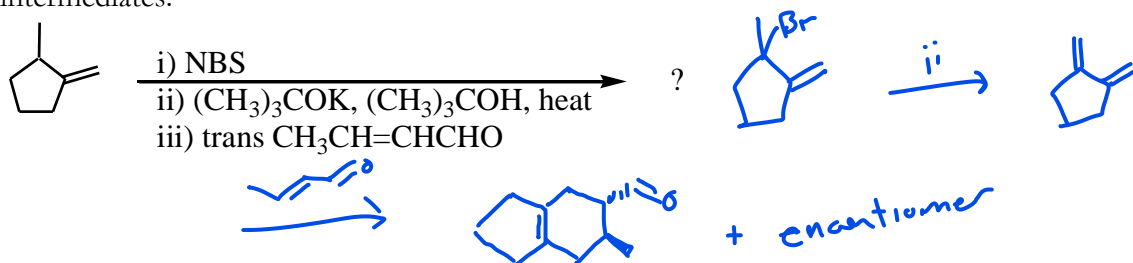


V

17. Complete the following sequence of reactions, giving structural details of all key intermediates.



18. Complete the following sequence of reactions, giving structural details of all key intermediates.



19 Predict the products for each DA reactions

