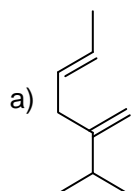


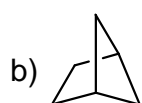
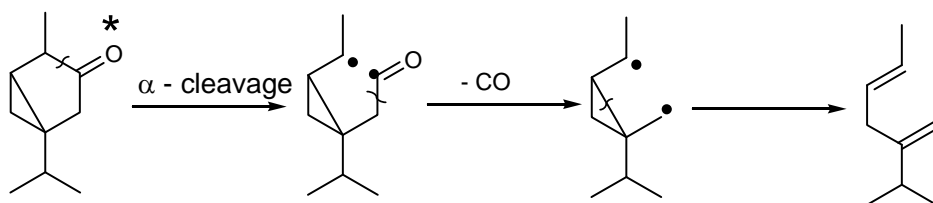
# Organic Photochemistry and Pericyclic Reactions

## Answers

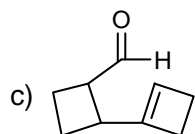
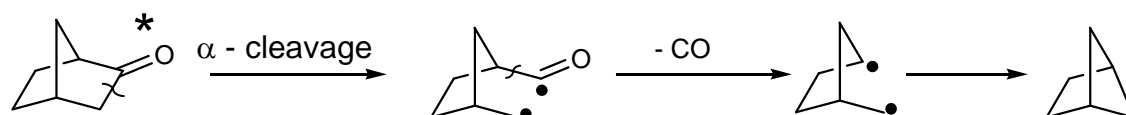
1. Find out the major product & provide mechanism?



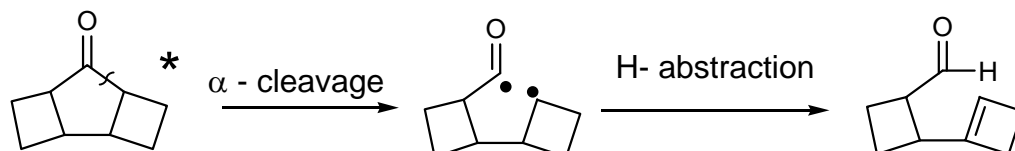
Mechanism:

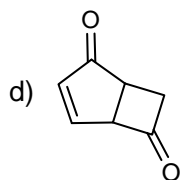


Mechanism:

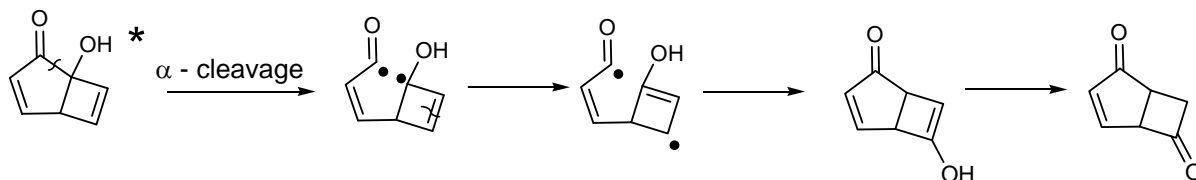


Mechanism:

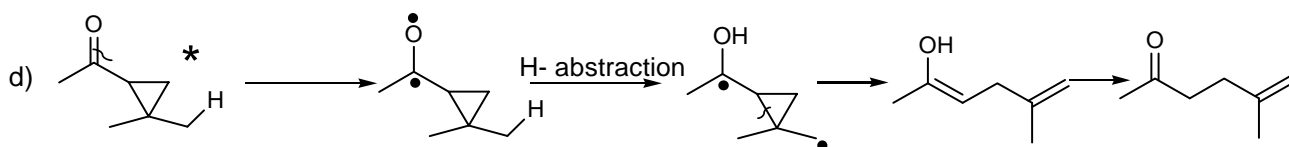
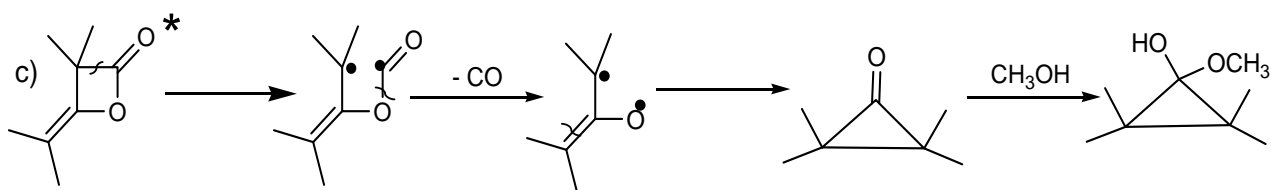
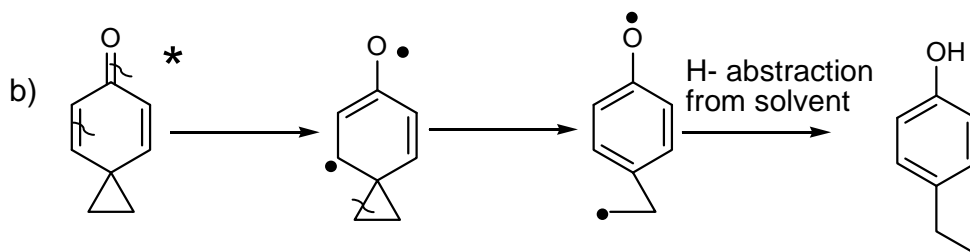
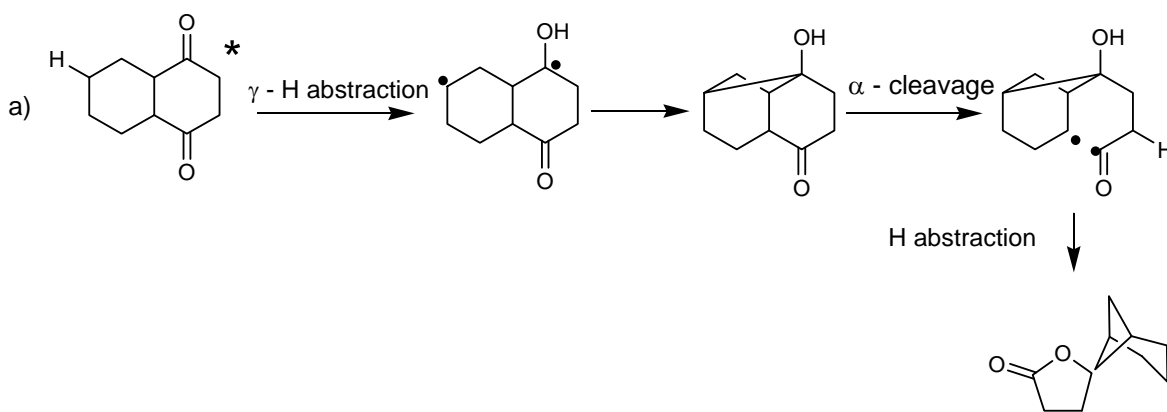




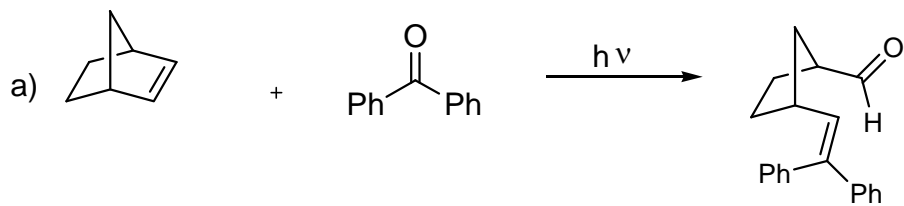
Mechanism:



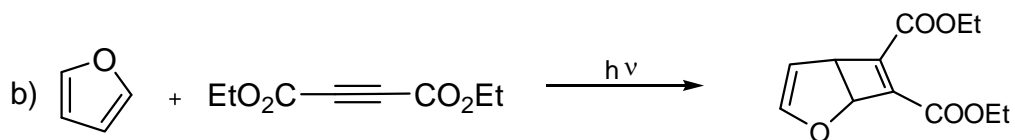
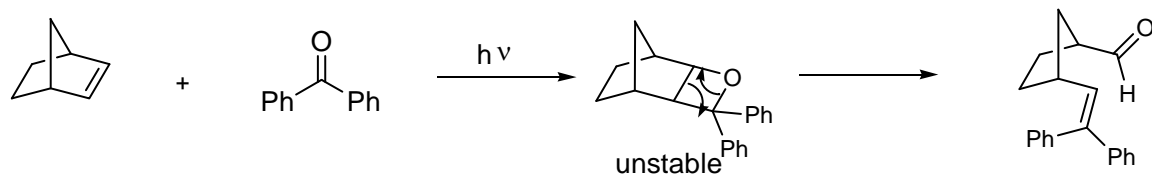
2. Give mechanism for the given transformation.



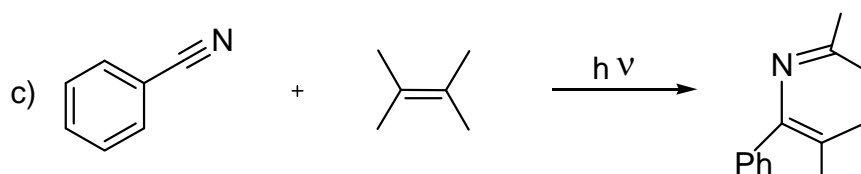
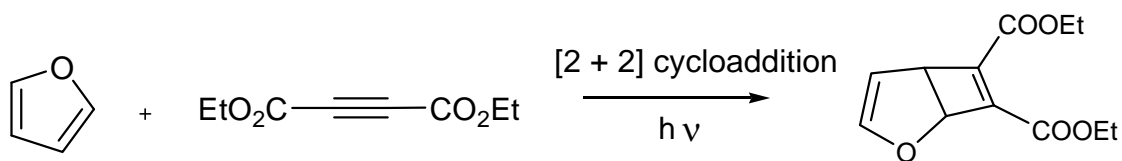
3. Complete the following reaction & give their mechanism?



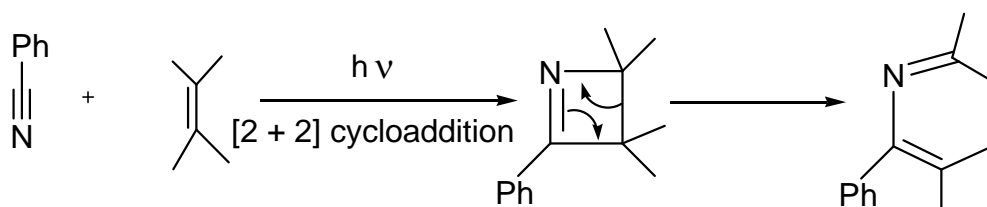
Hint: Mechanism involves Peterno Buchi reaction followed by oxetane ring opening

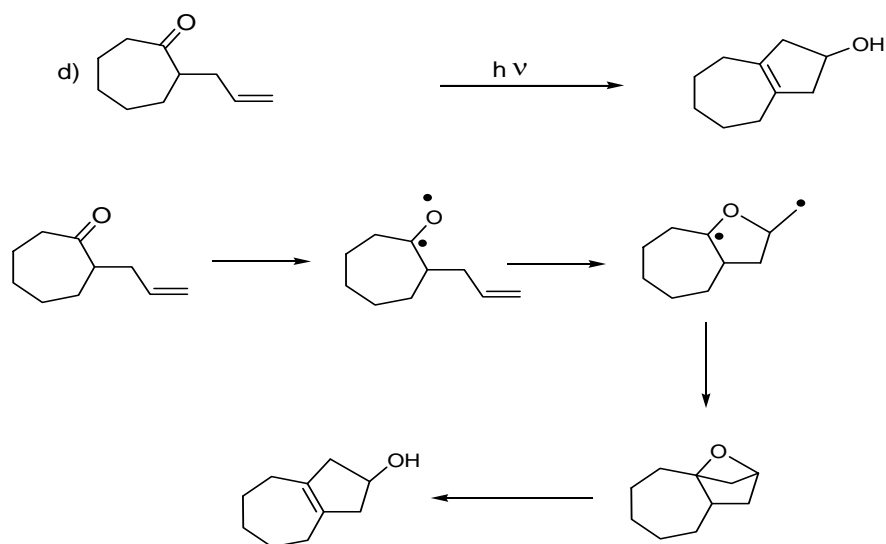


Mechanism:

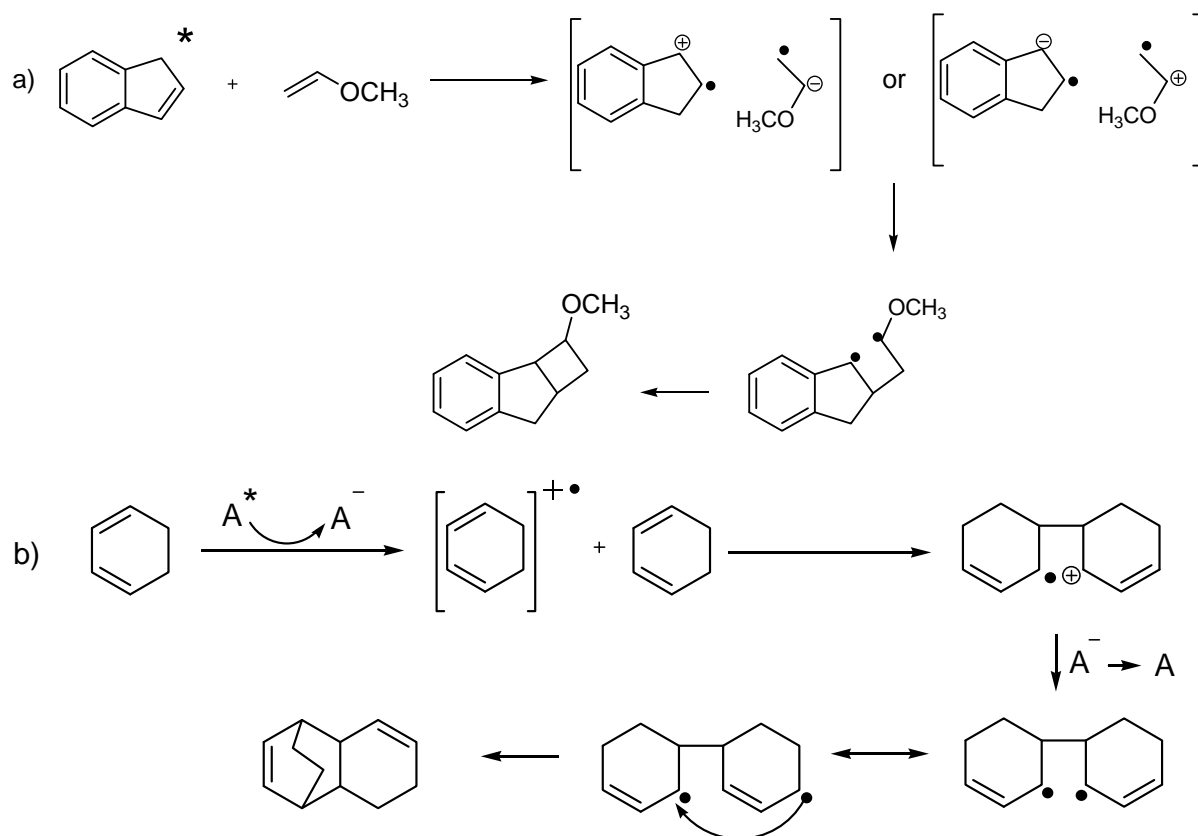


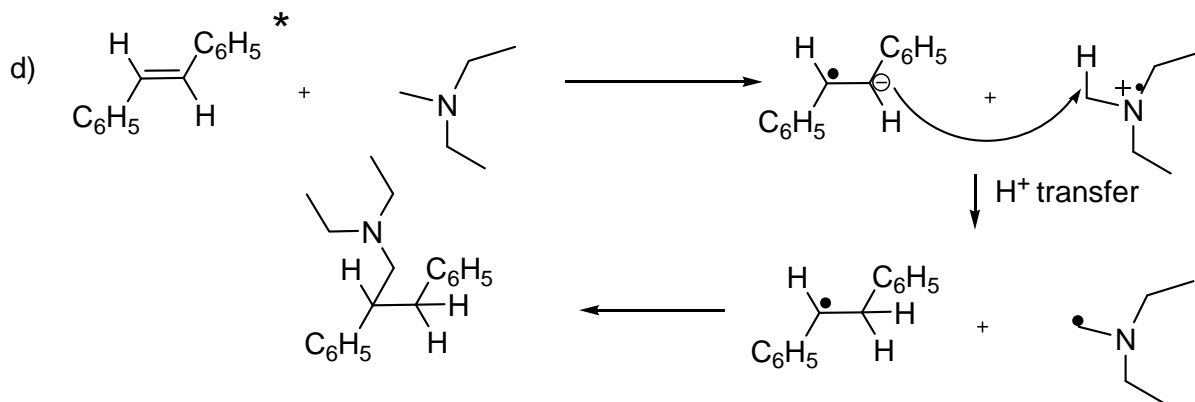
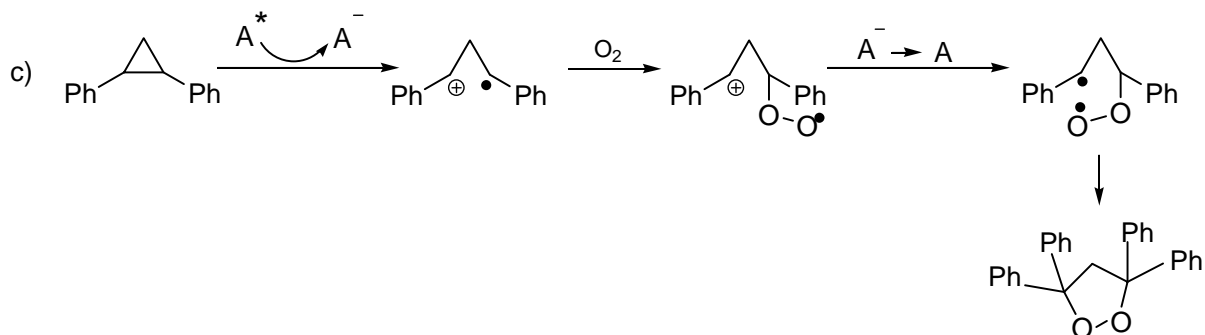
Mechanism:





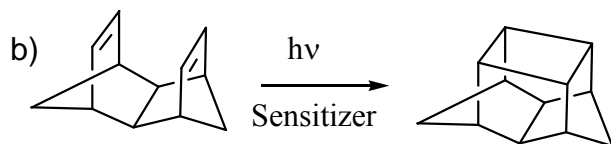
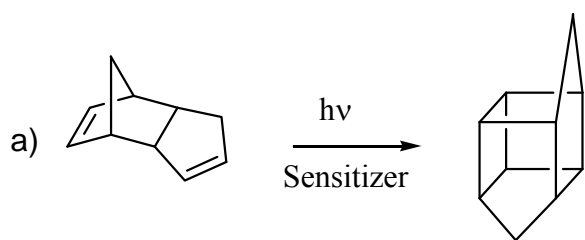
4. Write the possible mechanism for the following photochemical transformation.

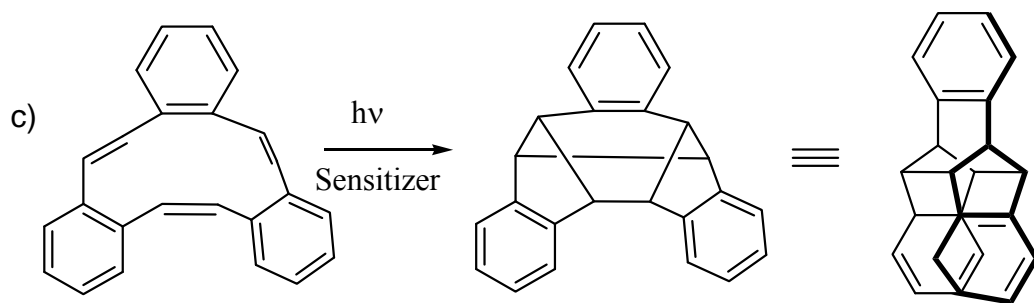




5. Write the major product.

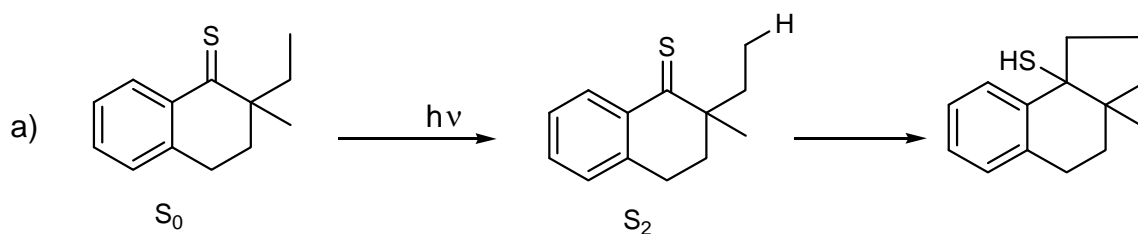
Hint: These examples follow Photo intramolecular cycloaddition



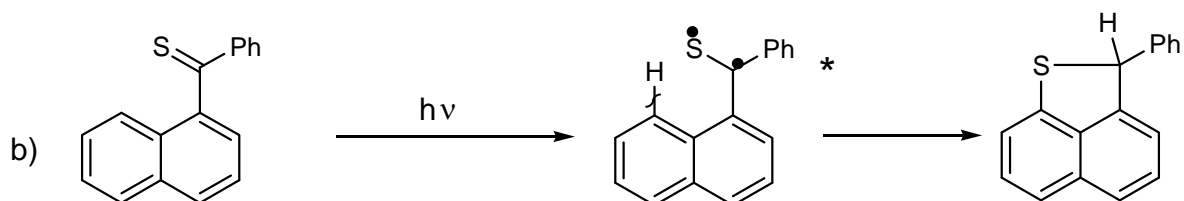


6. Write the major product & provide mechanism

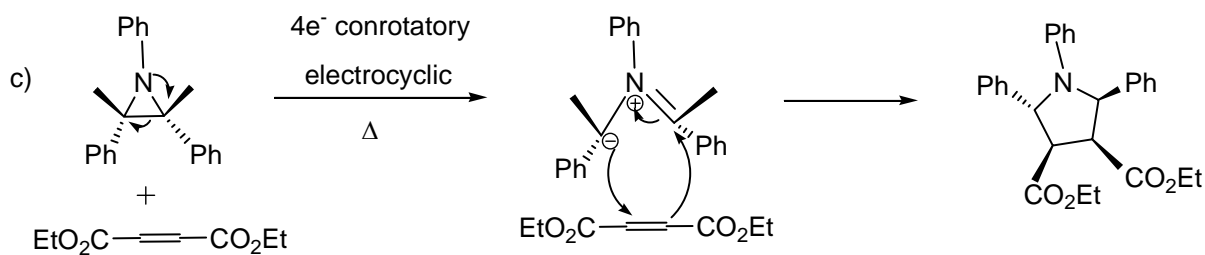
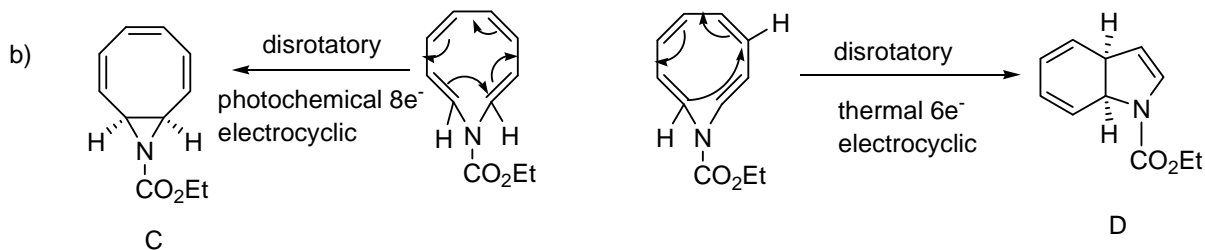
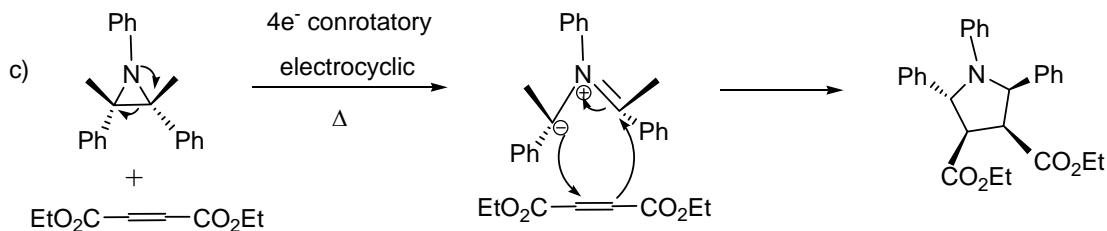
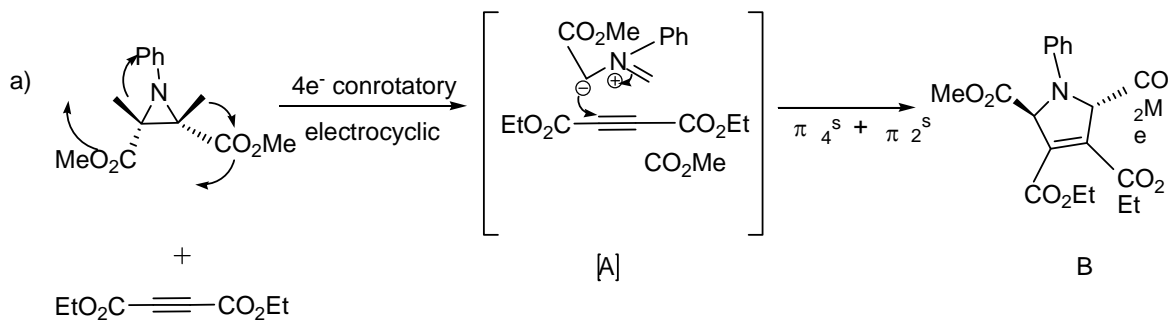
a. Hint: Alkyl Aryl thiones having  $\delta$  CH bond undergo intramolecular H abstraction



b. Hint: Aromatic thiones with vacant peri – position undergo reductive cyclization

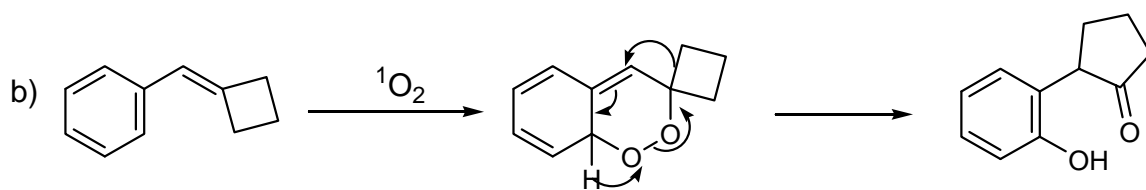
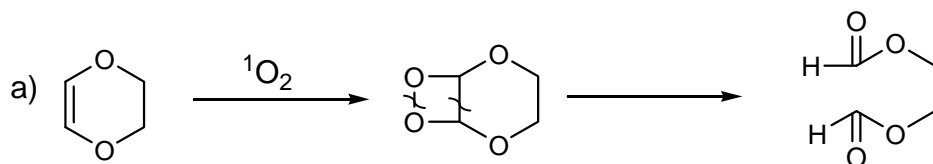


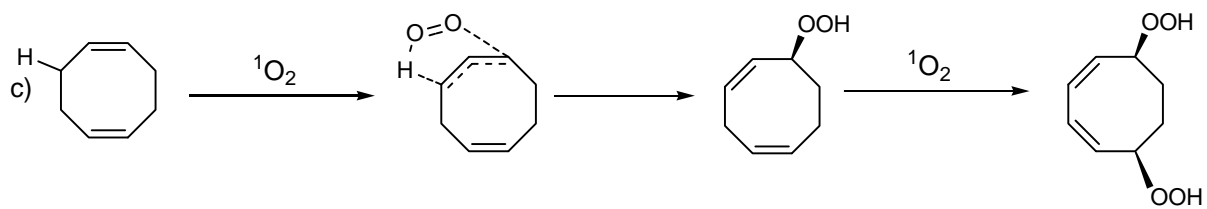
7. Find out the products in the following transformation.



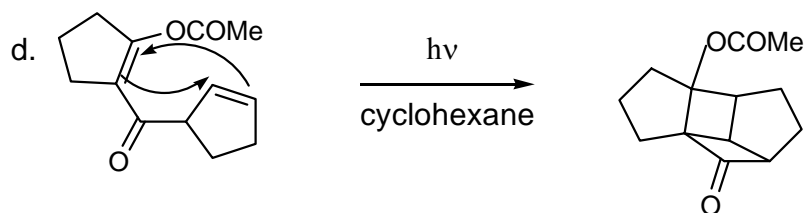
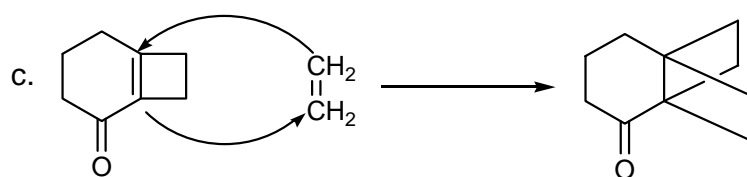
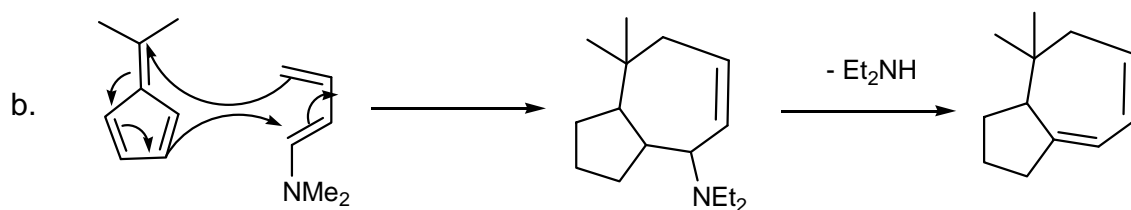
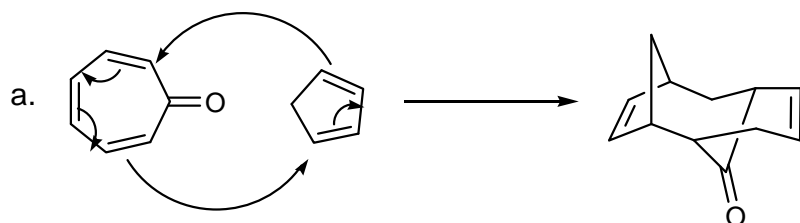
8) Suggest mechanism for the following transformation.

Hint: Rosebengal generates singlet oxygen





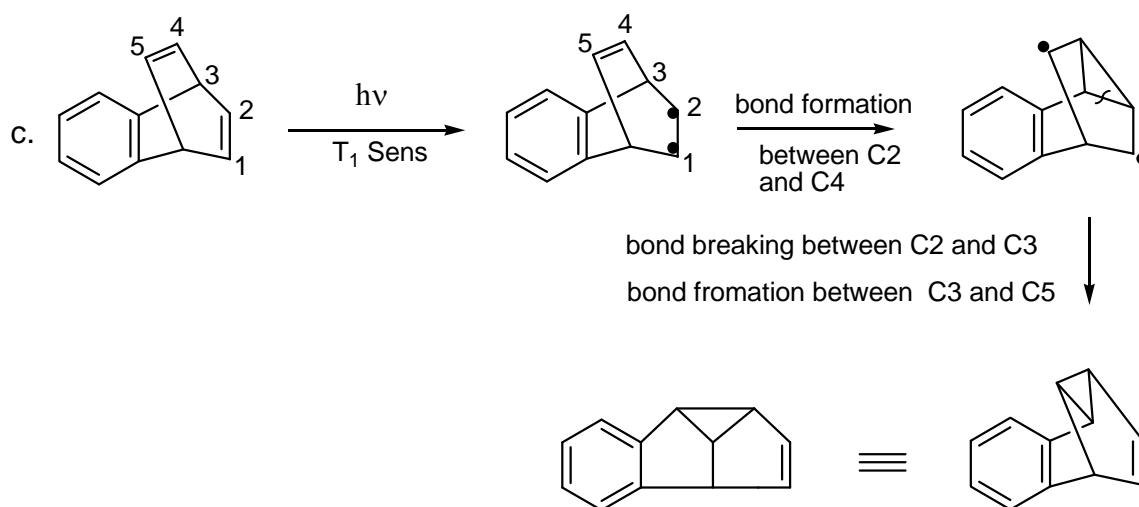
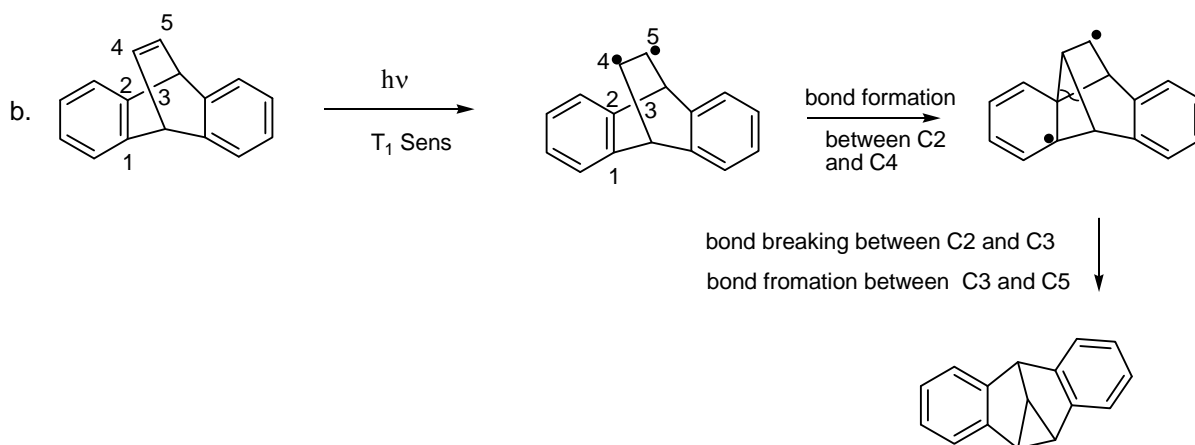
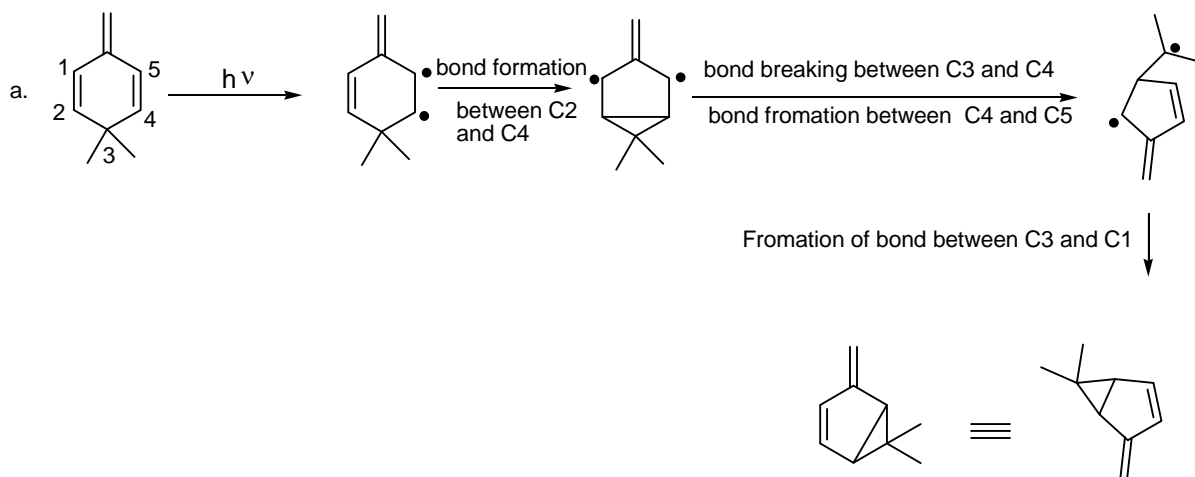
9. Predict the major product.



10. Complete the given reaction and give the mechanism.

Hint: Di- $\pi$  methane rearrangement

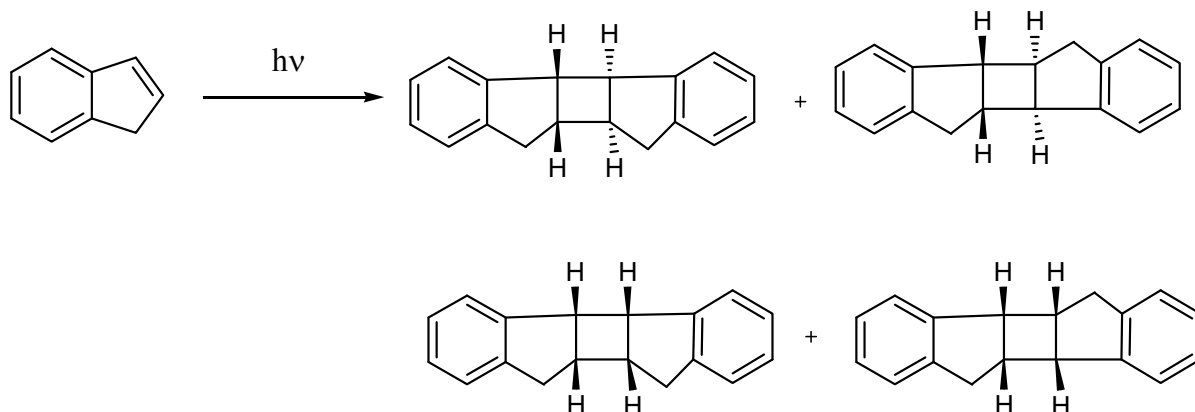




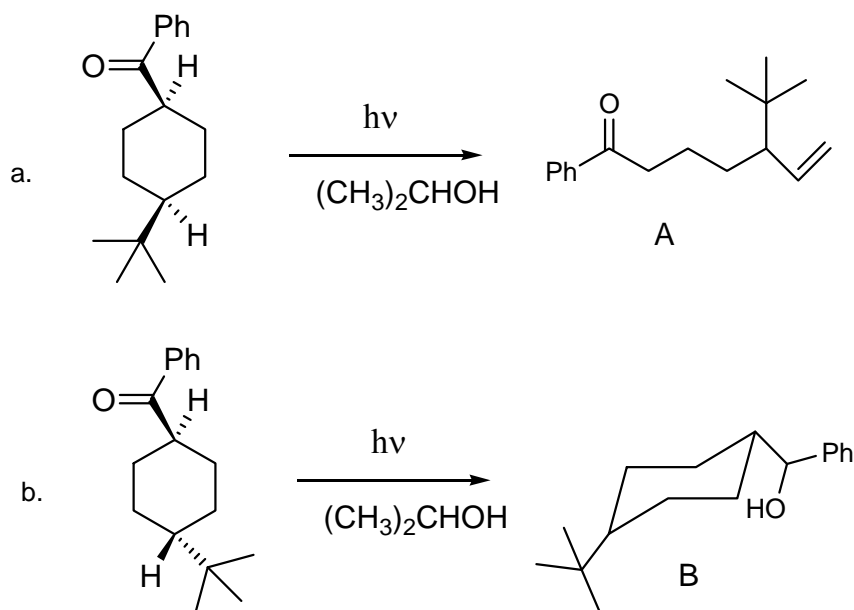
d. Hint: Oxa Di- $\pi$  Methane rearrangement



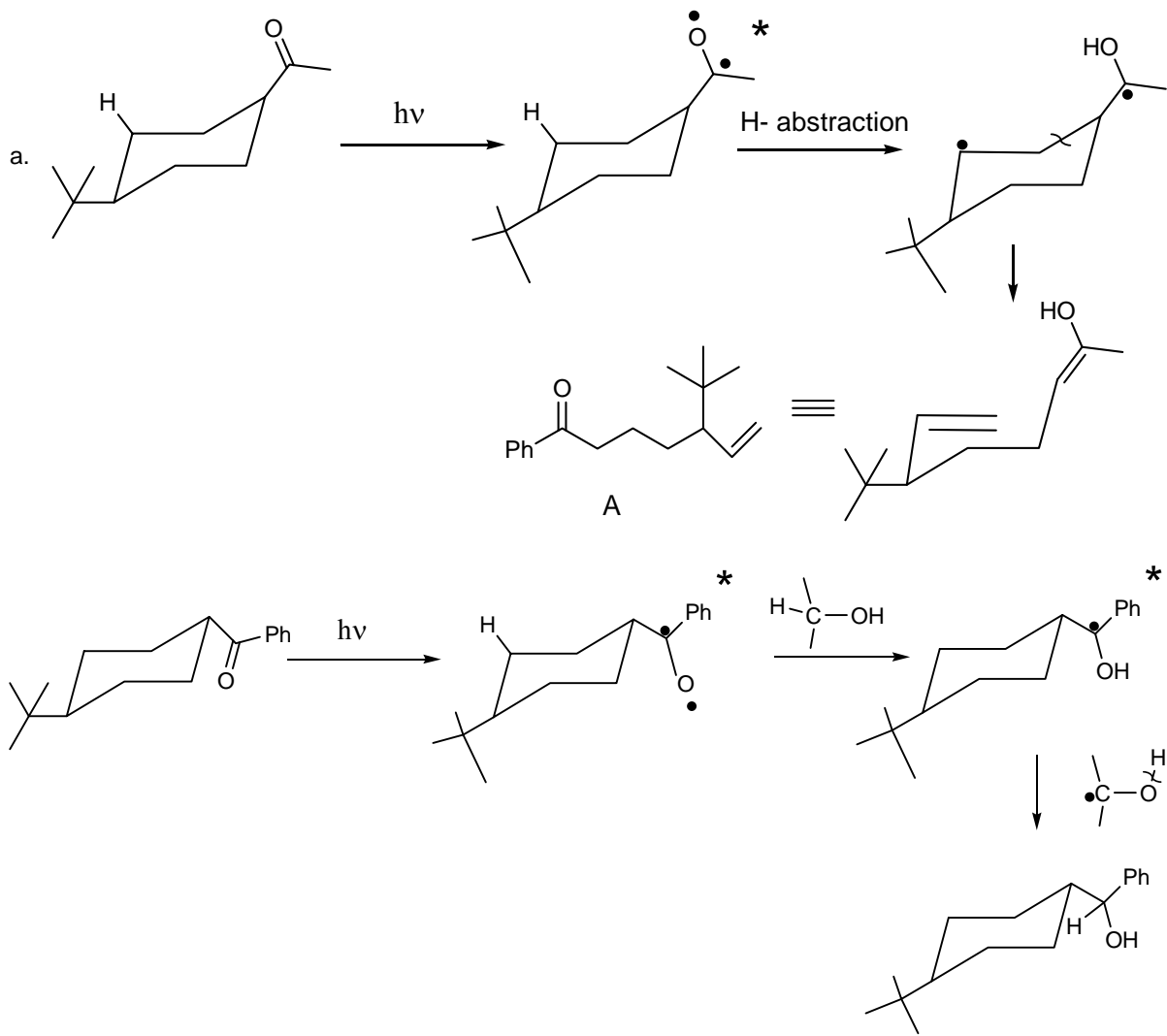
11. Write all the four products obtained in the given reaction



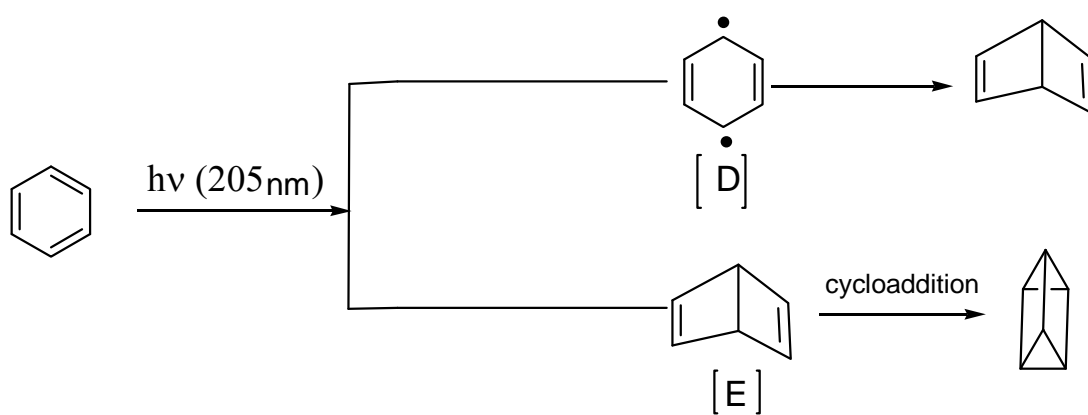
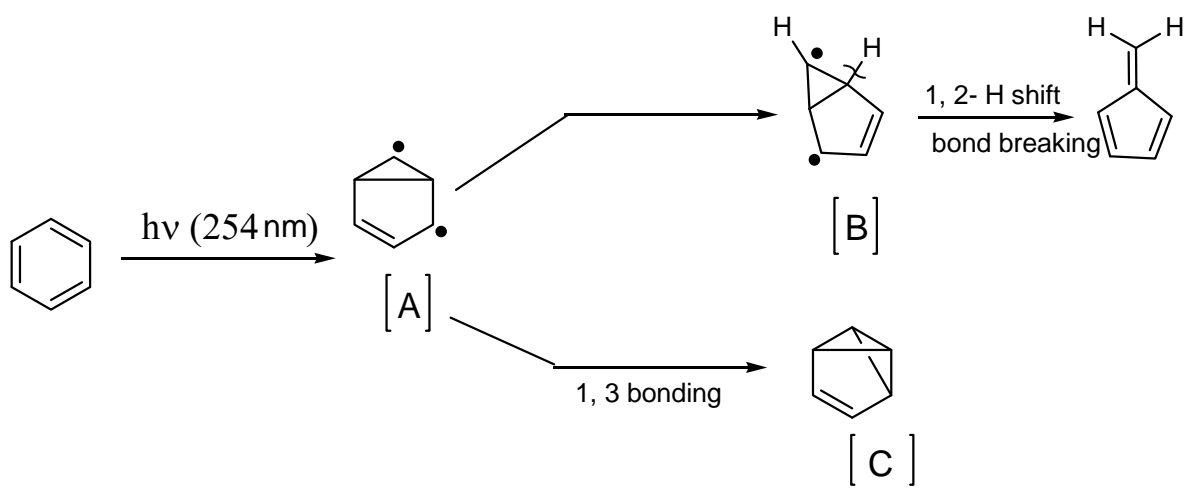
12. Find out the product A and B in the given transformation and explain the difference in the photoreaction



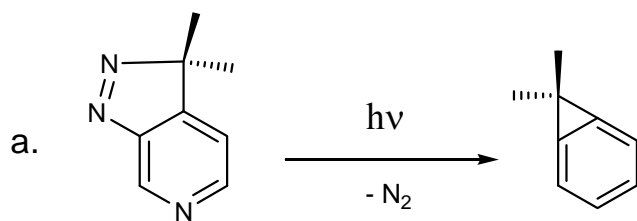
Hint: In the case of cis transformation i.e. 'a'  $\gamma$ -H abstraction is possible whereas in trans it is not possible (not spatially close)



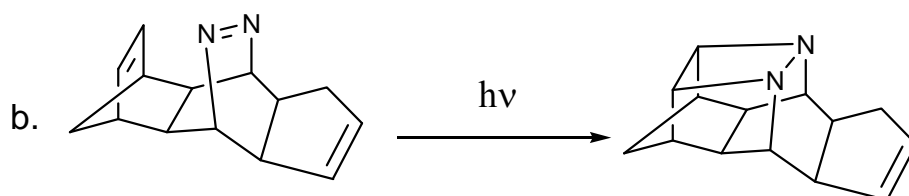
13. Find out the product missing in the given transformation



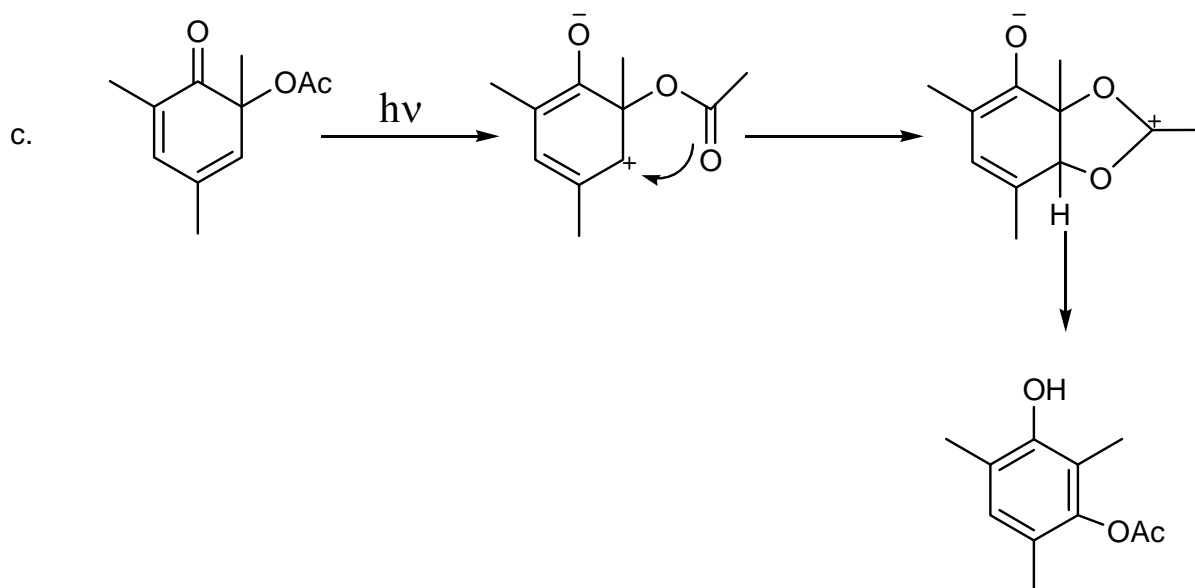
14. Predict the major product for the given transformation



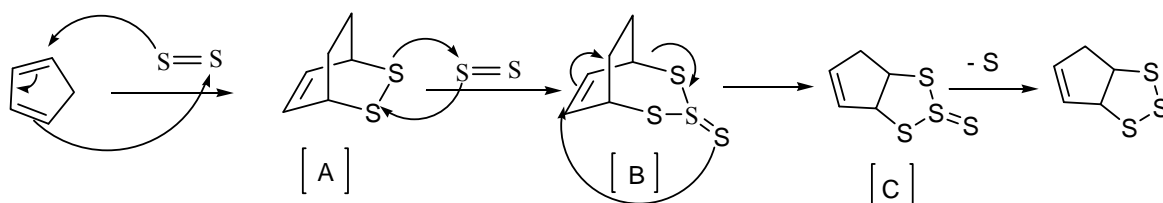
Hint:  $N_2$  extrusion occurs upon irradiation of pyrazolines



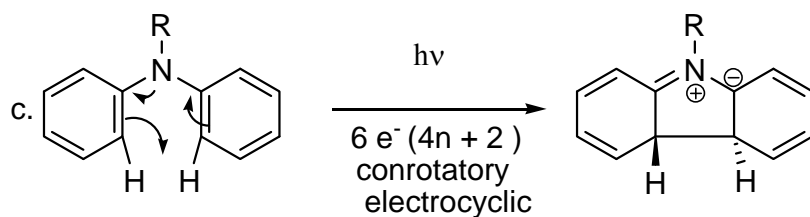
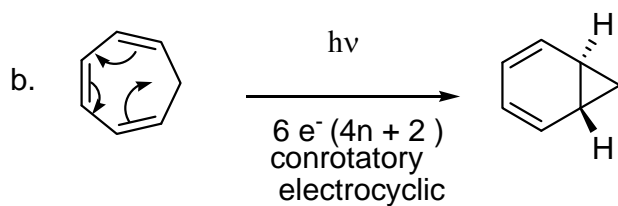
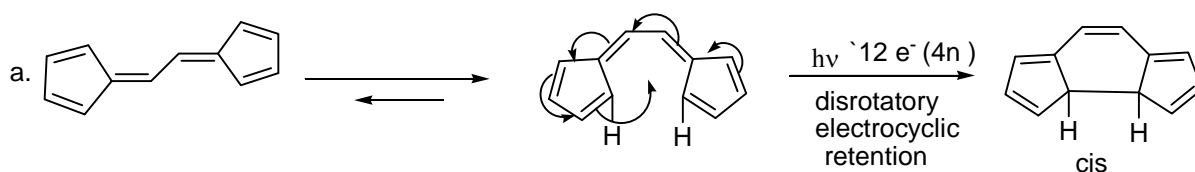




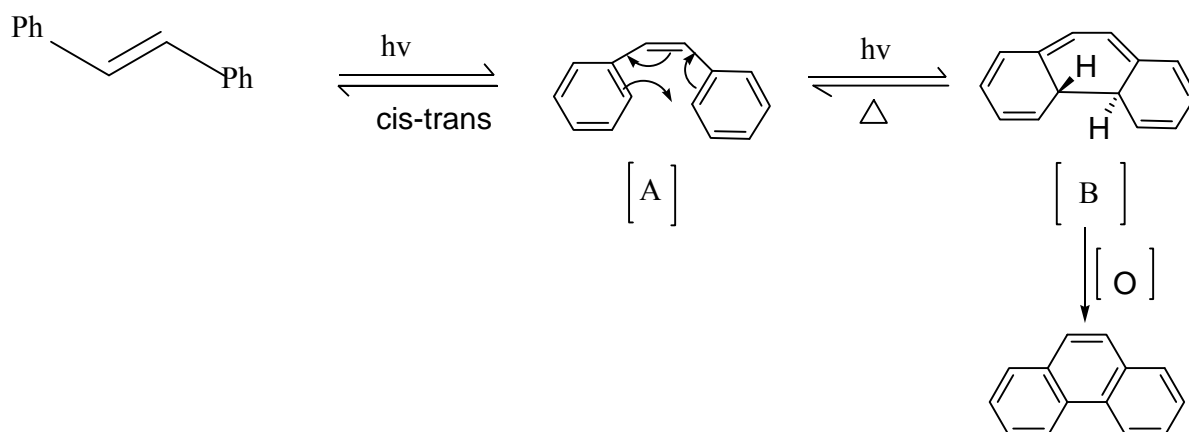
16. Find the intermediates formed during the following transformation



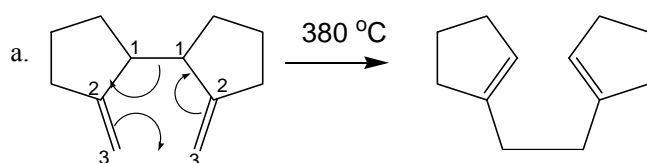
17. Predict the stereochemistry of the following pericyclic reaction



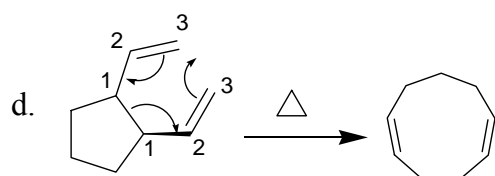
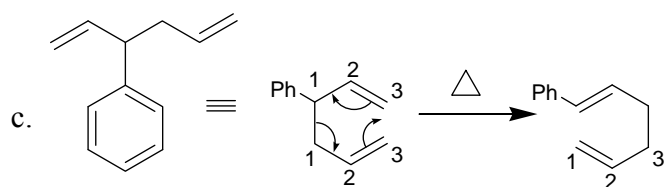
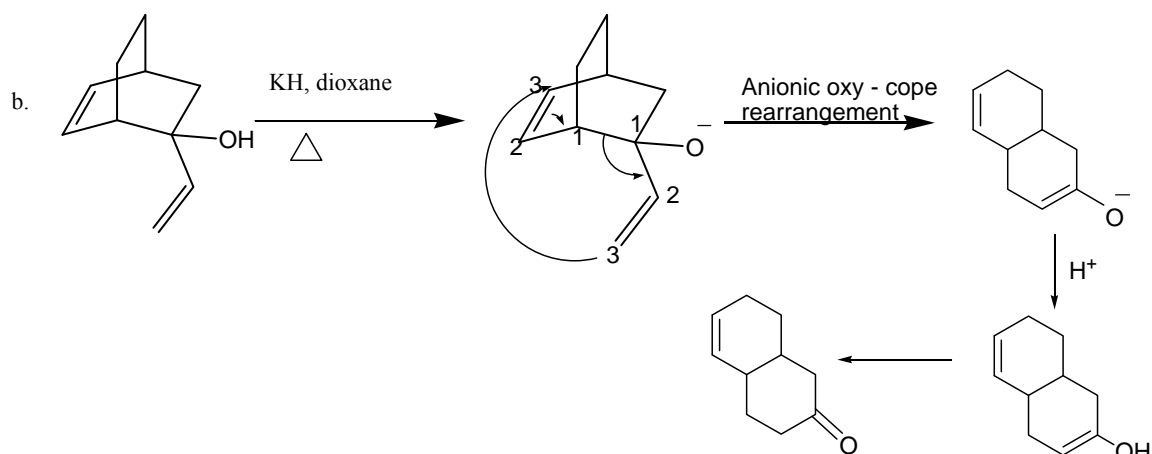
18. Predict the structure of 'A' and 'B' in the given transformation.



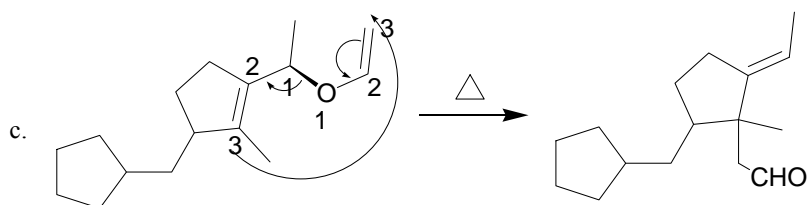
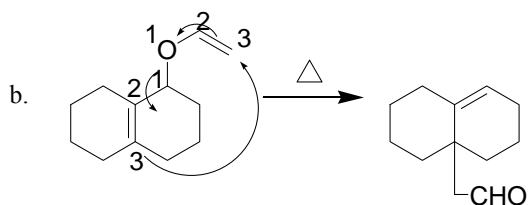
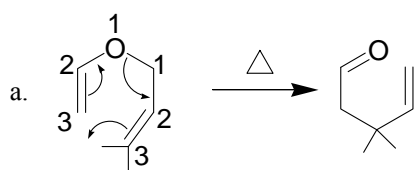
19. Predict the product



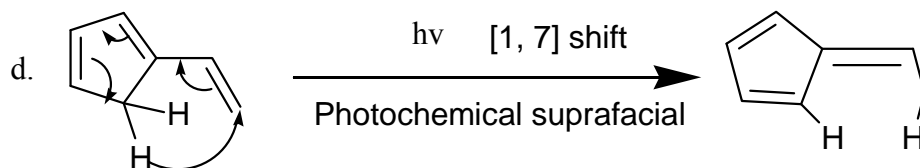
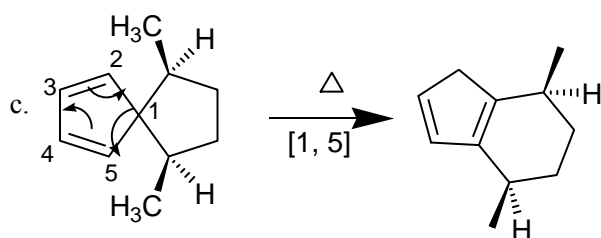
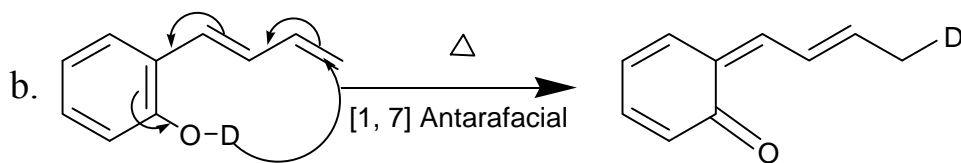
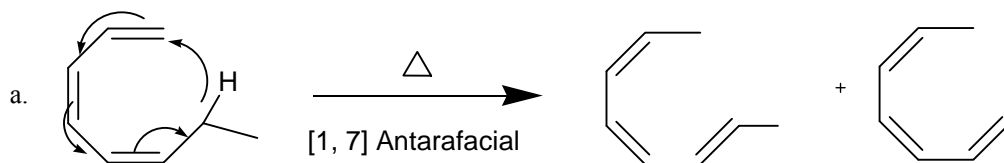
Hint: Cope rearrangement



20. Predict the product.



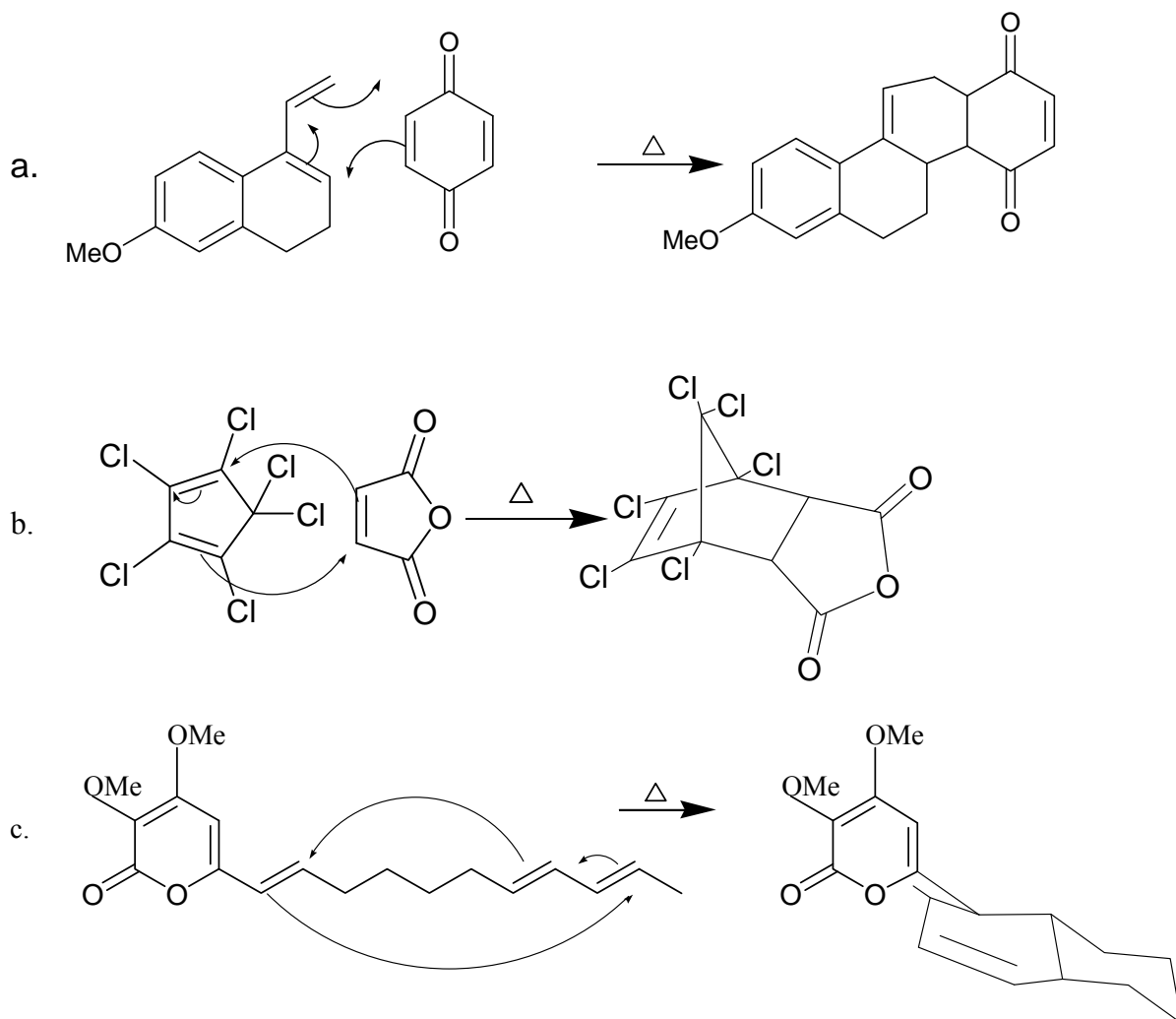
21. Write the product and give their mechanism.



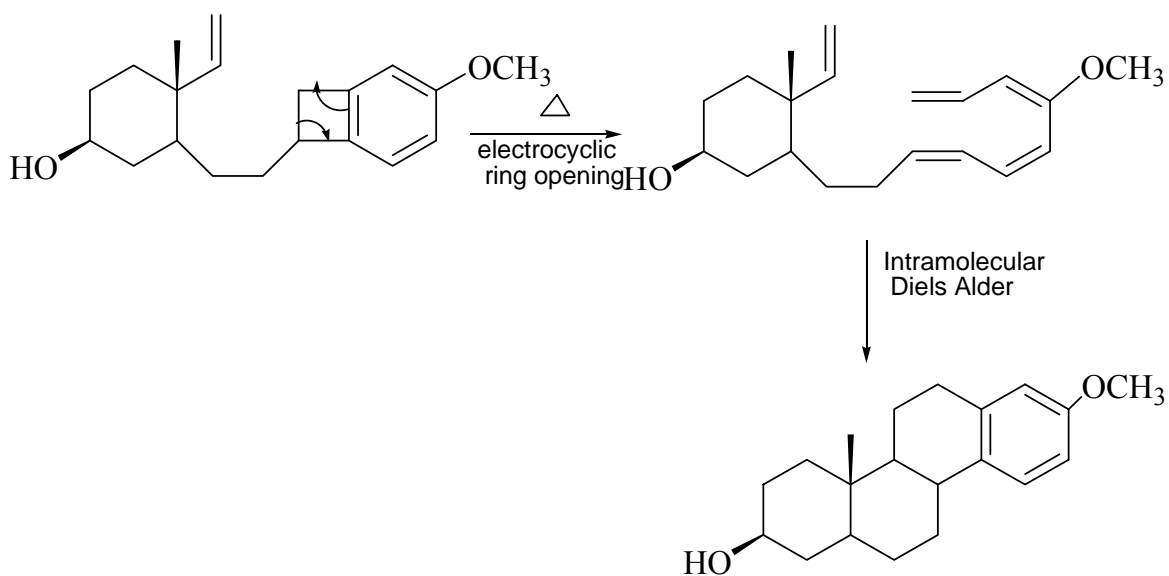


22. Write the major product

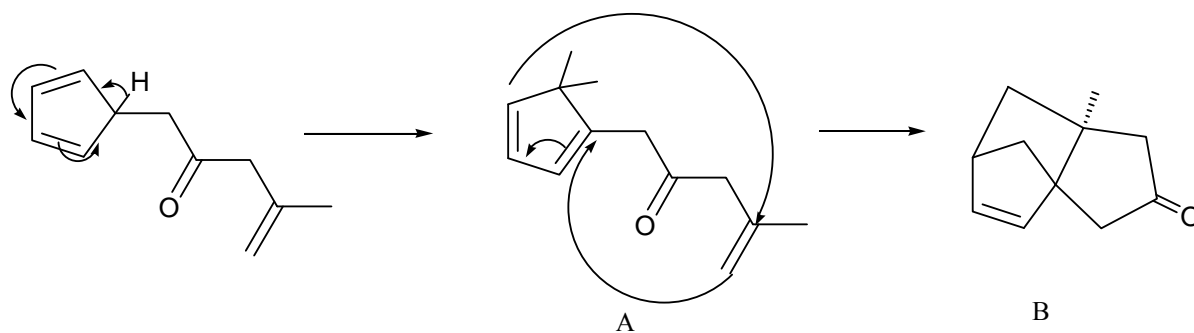
Hint: Diels Alder reaction



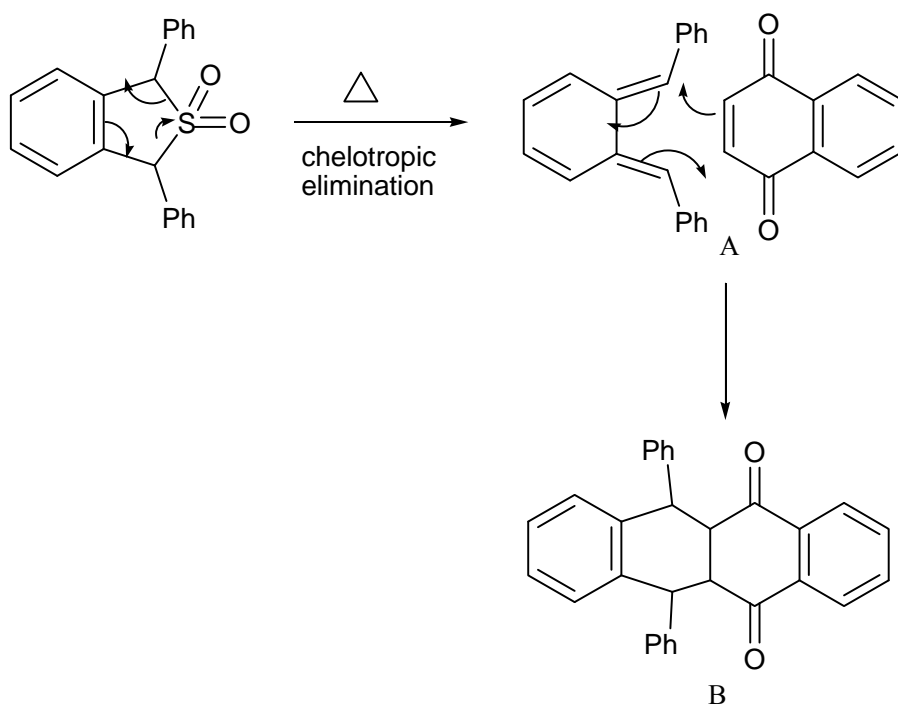
23. Find out the A and B in the following transformation.



24. Find out A and B in the following transformation.

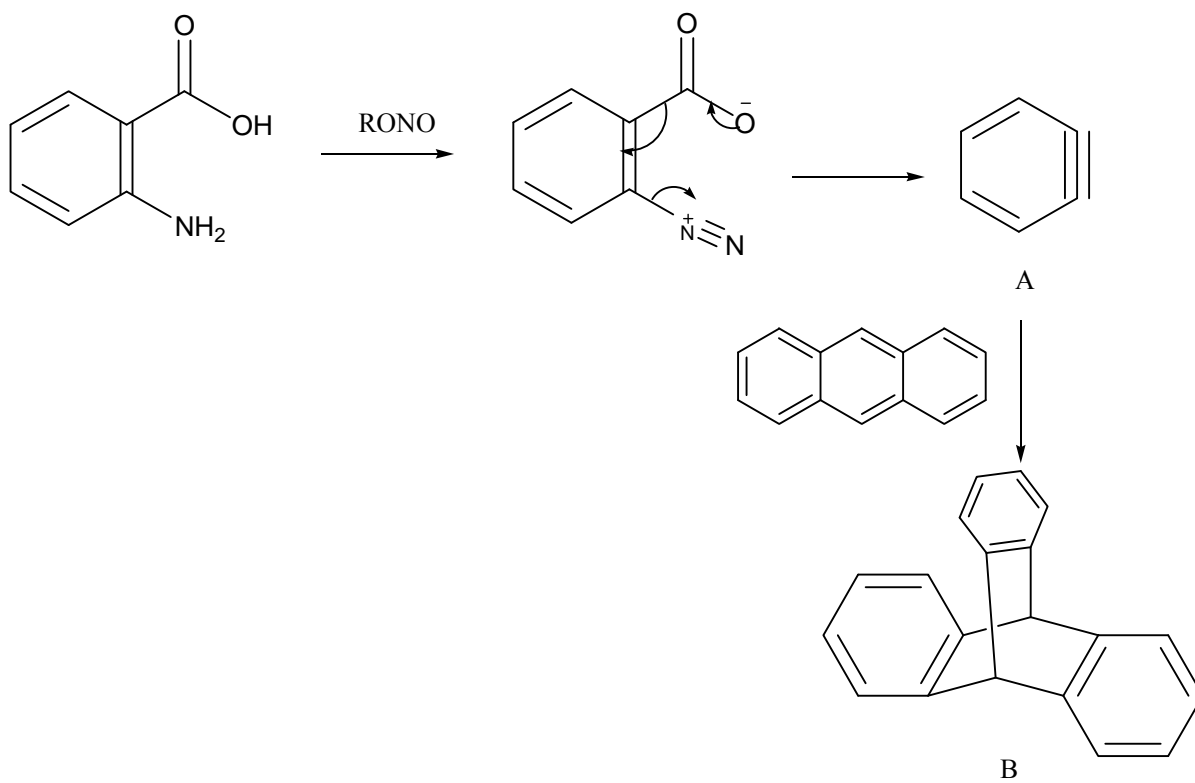


25. Find out the A and B in the following transformation.

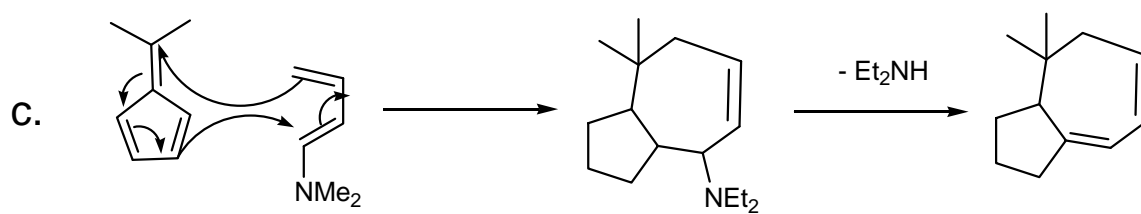
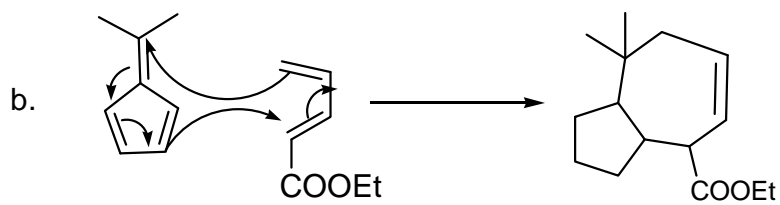
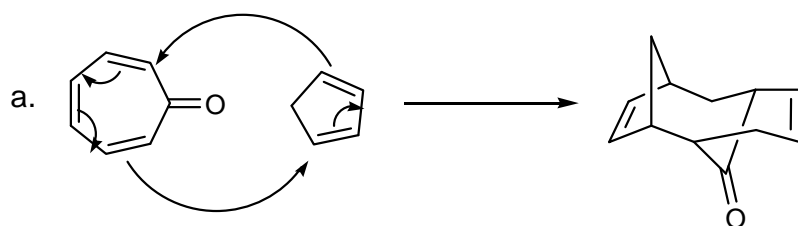


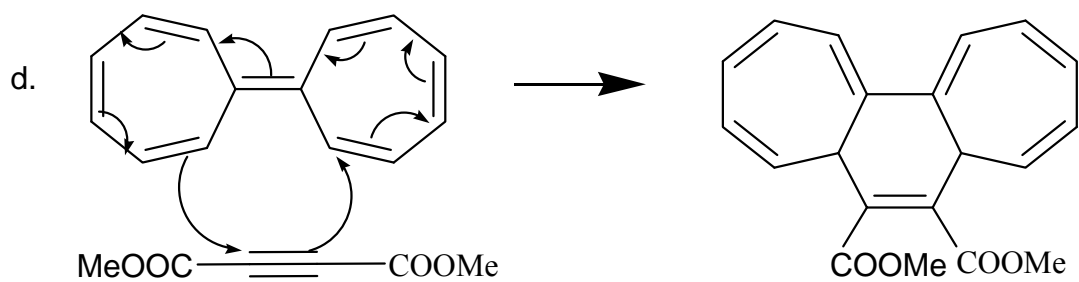
26. Find out the intermediates.

Hint: Benzyne is produced by diazotisation of anthranilic acid

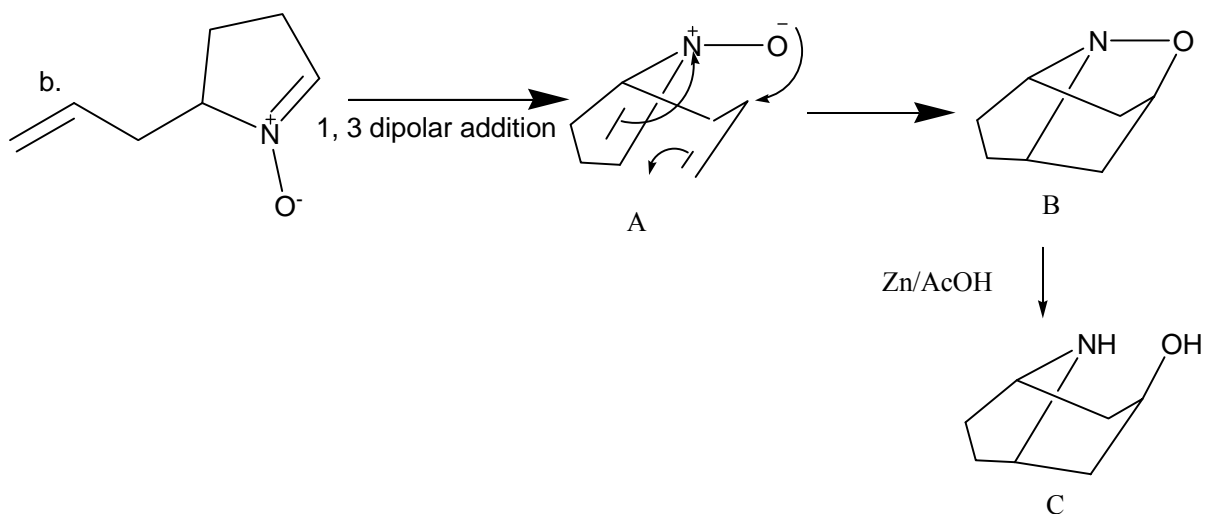
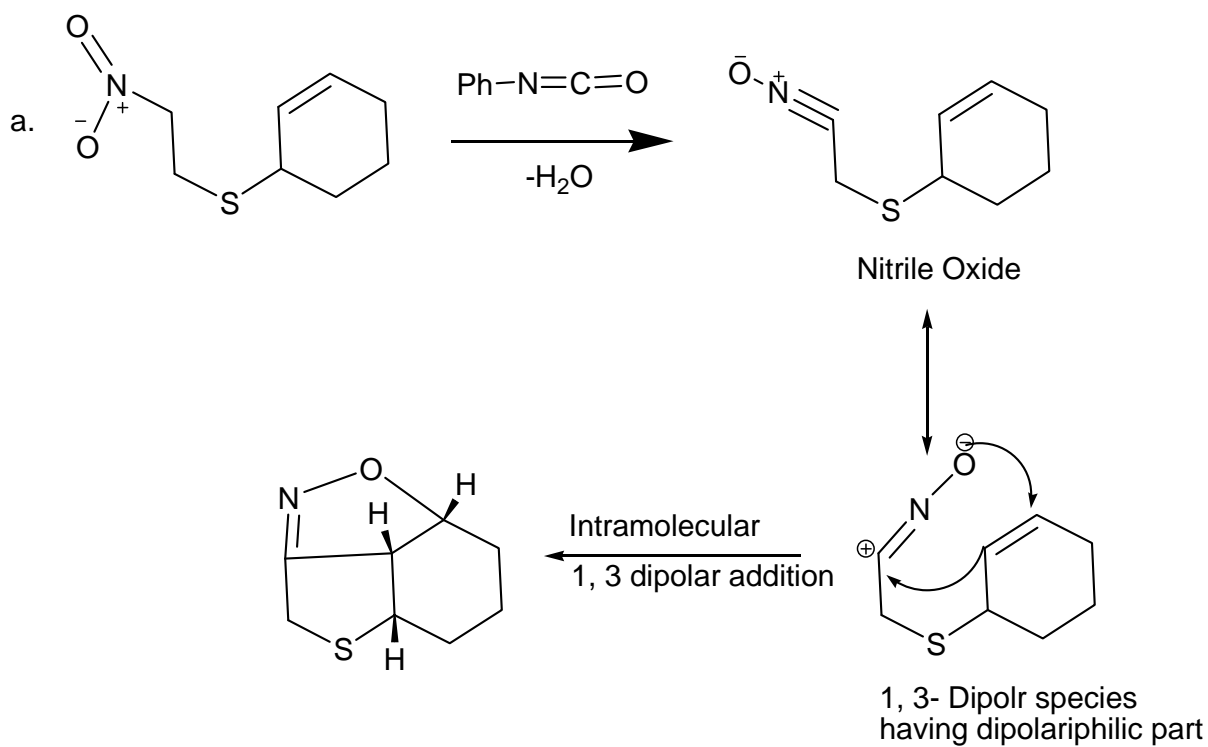


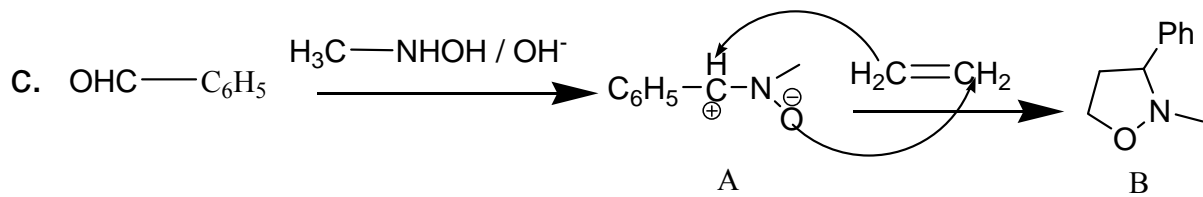
27. Find out the product.



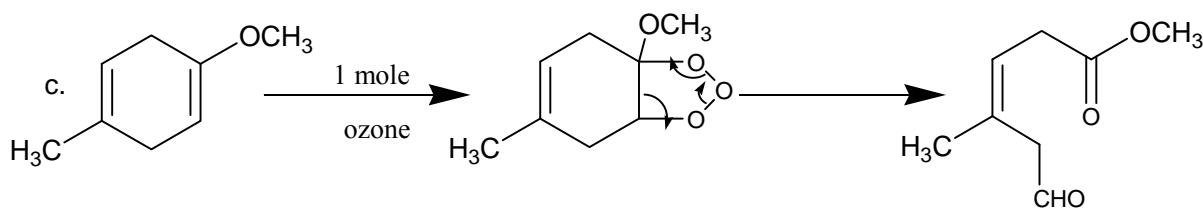
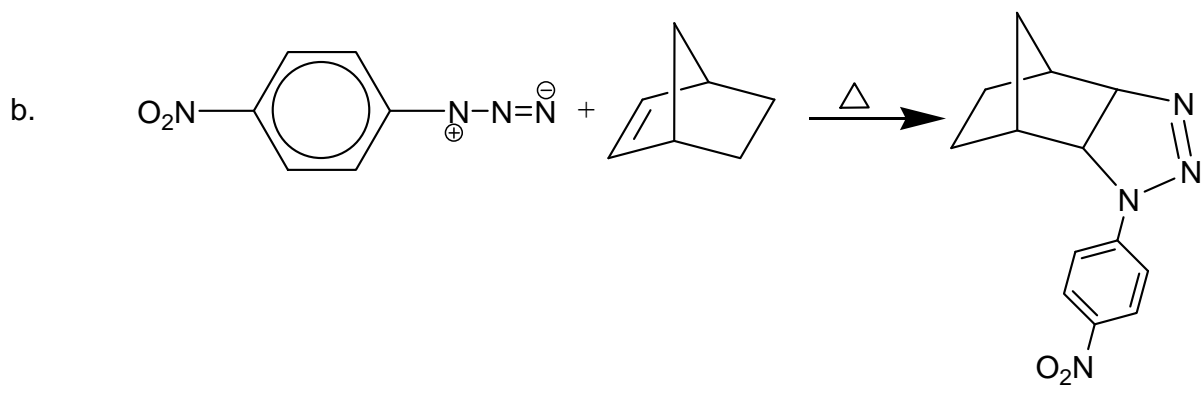
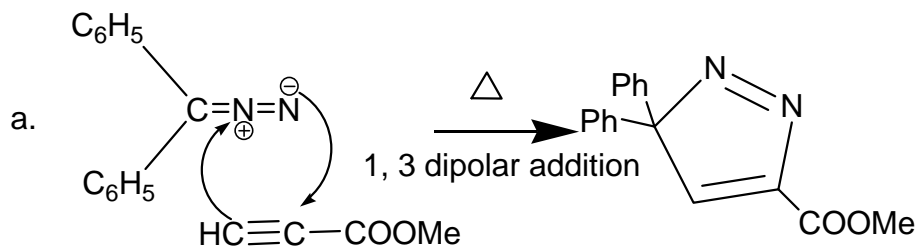


28. Find out the product.





29. Predict the product.



30. Predict the major photoproduct.

