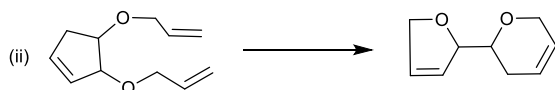
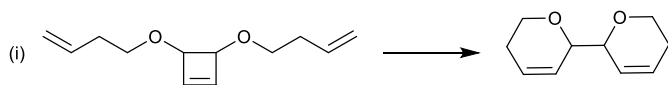
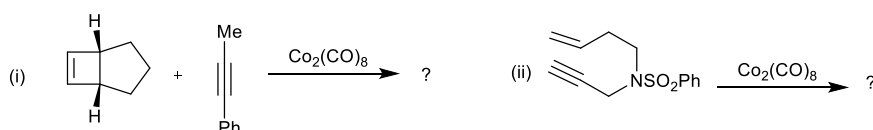


Q (a) Explain the formation of following metathesis products.

10

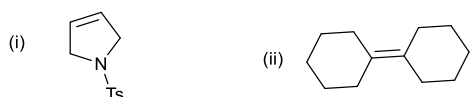


(b) Write the major product for the following transformations



(c) Write the structures of Grubbs Ist, IInd and IIIrd generations catalysts. Using Grubbs metathesis prepare the following two compounds

10

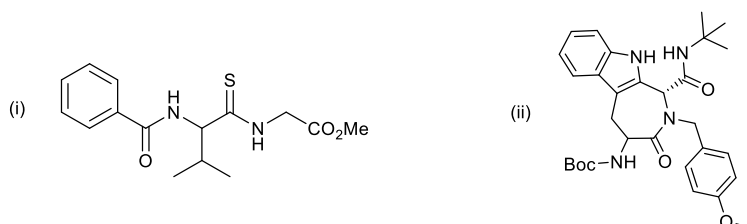


(d) Write a Chalk–Harrod Mechanism for the Platinum-Catalyzed Hydrosilylation of a propene. Also write the structure of Marko's catalyst

5

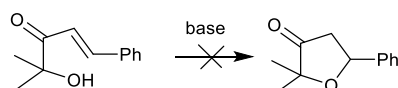
(e) Using Ugi reaction prepare the following compound.

10



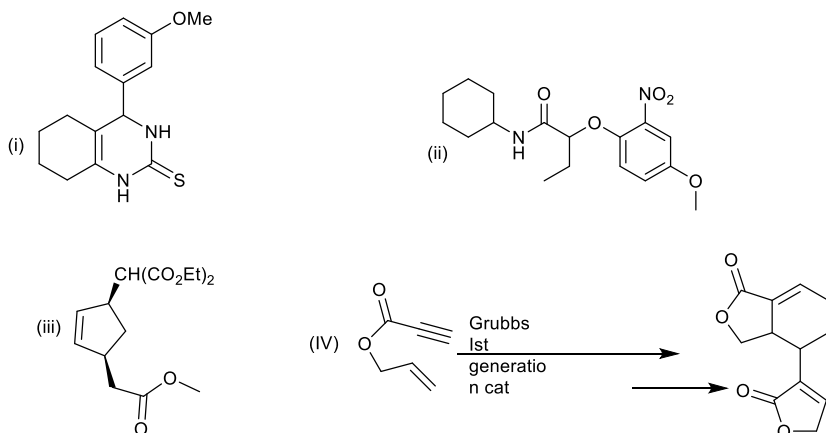
(f) Why the base catalyzed intramolecular addition does not proceed as expected. However, the acid catalyzed reaction proceeds?

5



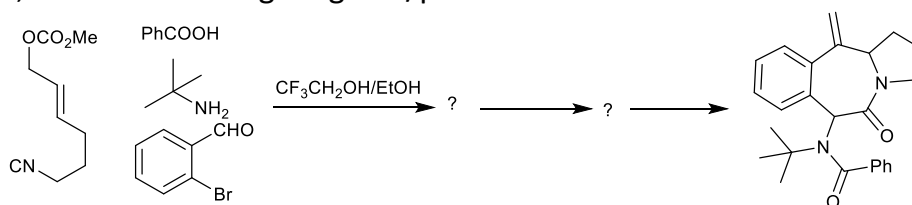
Q (a) Write synthesis of the following compounds indicating all the steps, reaction conditions and intermediates.

16



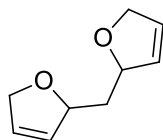
(b) Carry out the synthesis of natural product-like compound given below by coupling an Ugi multicomponent reaction with a  $S_N2'$  cyclization followed by an intramolecular Heck reaction. Also, write the missing reagents/product and reaction conditions

8



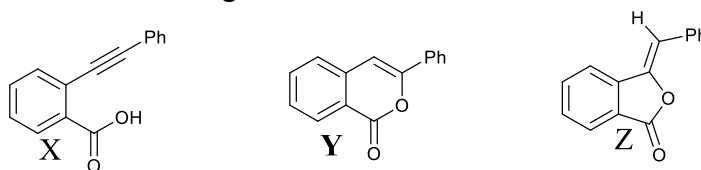
(c) Identify the appropriate cyclopentene derivative to prepare the following product using metathesis strategy in the presence of Grubbs catalyst. Also stepwise explain formation of given product.

5



(d) Intramolecular cyclization of enynecarboxylic acid **X** can afford both pyran-2(2*H*)-one (**Y**) and furan-2(5*H*)-one (**Z**) derivatives. Explain the formation of products **Y** and **Z** by using intramolecular cyclization of **X** in the presence of strong acid or base.

5



(e) Using Ugi reaction and Grubbs metathesis prepare the following compound

6

