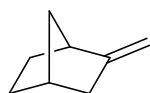


Self-assessment test with focus on SynCat subjects (3)

Organic Chemistry (advanced level)

1. Take a look at compound **A**. Clearly identify the most acidic proton and provide an explanation showing the decisive orbital interactions.



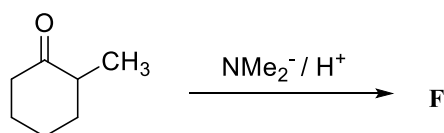
A

2. From a chemical point of view, compound **B** could undergo two different cyclization reactions to give rise to **C** or **D**. In practice, only one product is observed. Provide the structure for **C** and **D** with a brief explanation which one of those two products is formed.



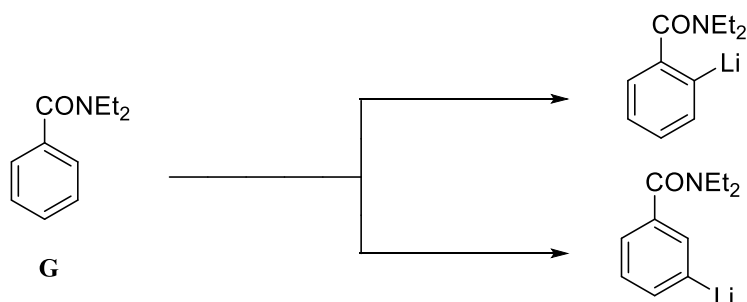
B

3. Provide the structure of product **F** that is formed in the reaction shown below. Give an explanation for possible stereochemical issues.



E

4. How would you approach the syntheses of these organolithium compounds starting from **G**? Please provide all necessary reagents and comment on regiochemistry if applicable.



G

5. Compound **H** adds Grignard reagents with exceptionally high diastereoselectivity to form **I**. Specify the reactive conformation of **H** (Sawbuck or Newman projection) and the direction of attack of the nucleophile, including a brief rationale for your choice to form **I**.

