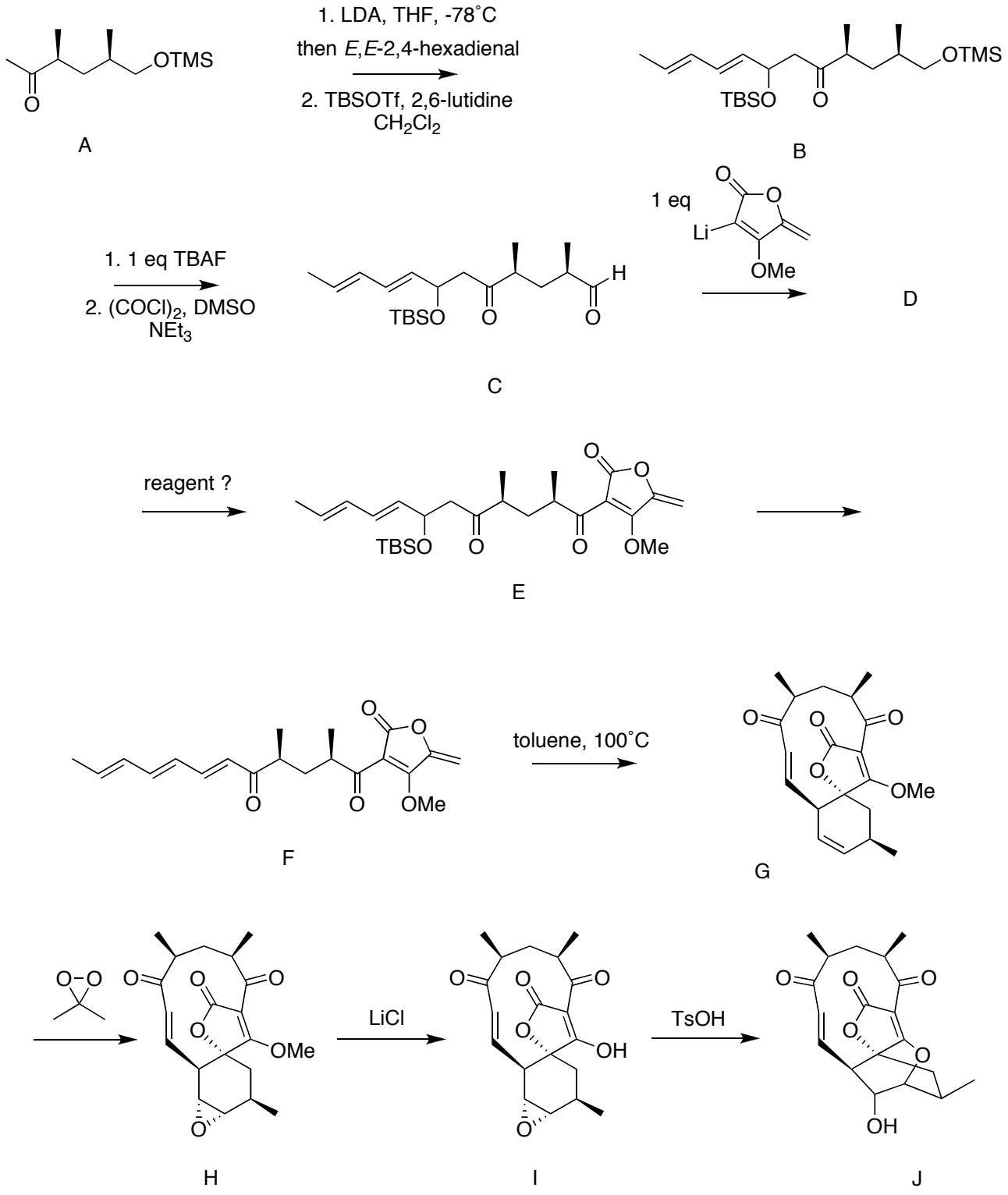
2nd Year Synoptic Organic Problem Sheet 1

(-)-Abyssomicin C (**J**) is an antibacterial marine natural product isolated from a sediment sample collected 289 metres beneath the surface of the Sea of Japan. A synthesis of Abyssomicin C with a diastereoselective Diels-Alder macrocyclisation as the key step has been reported (*Angew. Chem Int. Ed.* **2005**, *44*, 6533; DOI: 10.1002/anie.200502119) and selected elements of the synthesis appear below.



Answer the following:

1. Give mechanisms for the conversion of **A** into **B**;
2. Provide mechanisms for the conversion of **B** into **C**;
3. Give a structure for **D** and explain any issues of chemoselectivity;
4. Suggest a reagent for the conversion of **D** into **E**;
5. What type of reaction is the conversion of **E** into **F**, and suggest a possible reagent;
6. Identify both the diene and dienophile components in **F** and draw a mechanism for the conversion of **F** into **G**;
7. What type of transformation is **G** into **H**? Suggest a mechanism;
8. Provide a mechanism for the conversion of **I** into **J**.