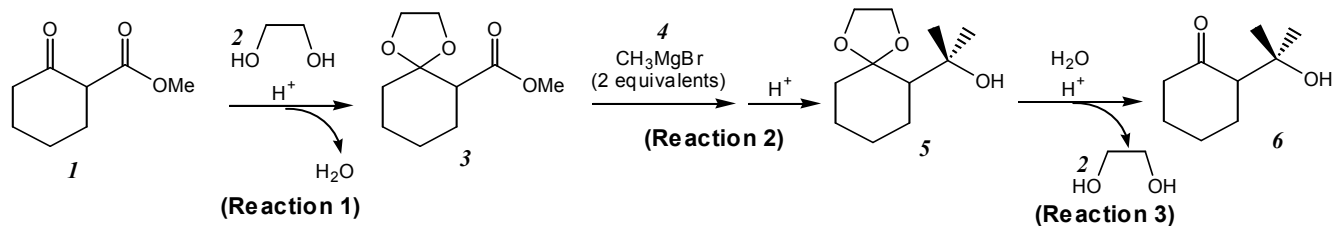
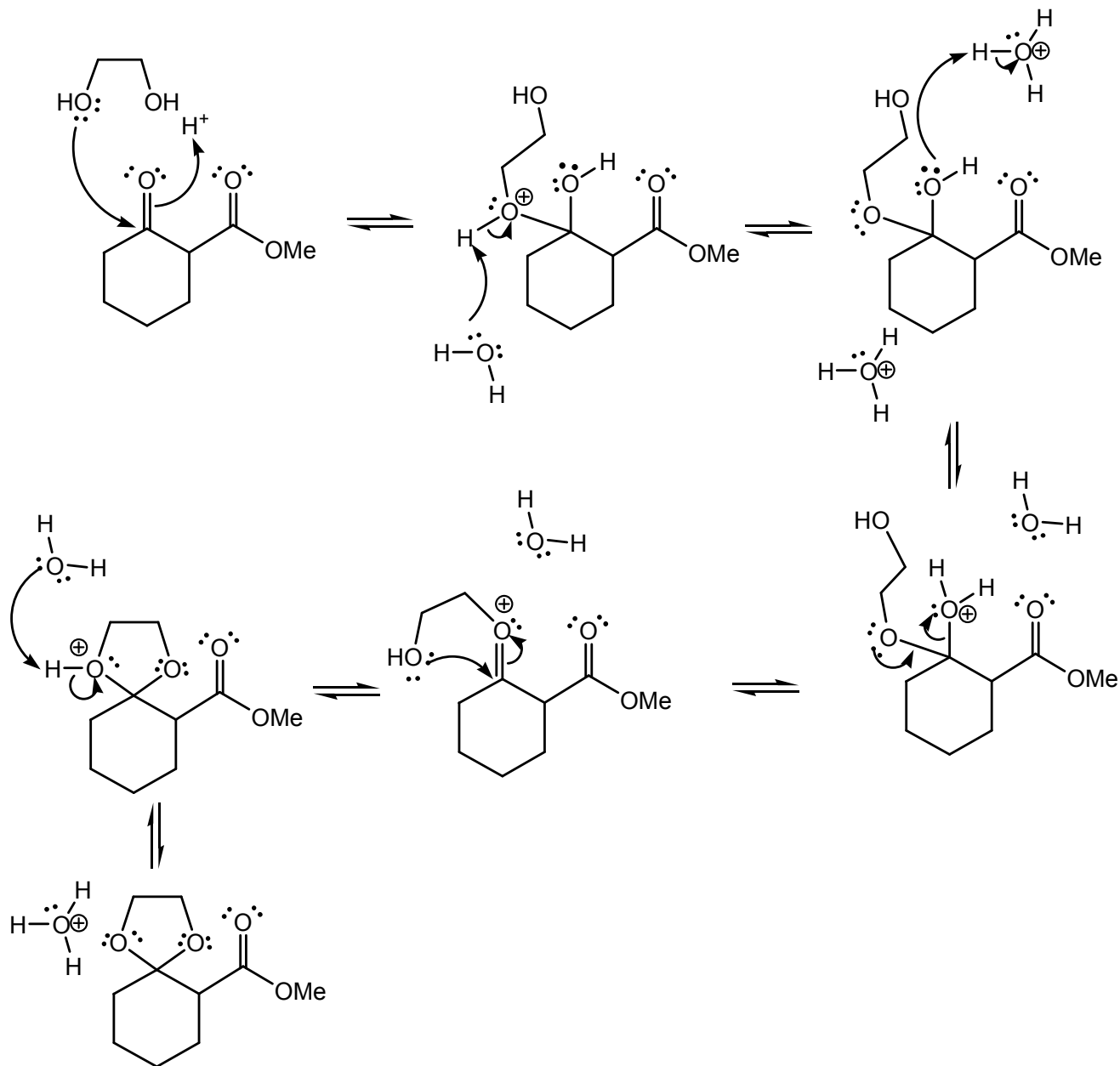


II. A synthesis for the preparation of compound **6** is proposed as below:



1. Please provide an electron-pushing mechanism for the formation of compound **3** from compound **1** (reaction 1). (16 points)



2. The proposed synthesis involves protection (reaction 1), nucleophilic addition (reaction 2), and deprotection (reaction 3). Will you expect to obtain the same final product, compound **6**, if compound **1** is treated with the Grignard reagent, **4**, (reaction 2) without going through the protection (reaction 1) first? Explain briefly your reason. (4 points)

No. Ketone is more reactive than ester toward Grignard reagent.

**Continue to the Next page**

III. Propose an electron pushing mechanism for the following reaction. You have to show how to form the hydrazone intermediate. (20 points)

