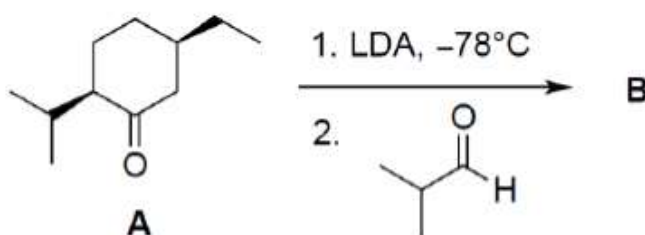


Please note: These are only sample exercises. You will receive the exercises to work on in a separate e-mail.

Example: Exercise Organic Chemistry

The ketone **A** was subjected to a reaction with LDA at $-78\text{ }^{\circ}\text{C}$, followed by addition of isobutyraldehyde (Scheme). Provide the product **B**, including the stereochemistry at all relevant stereogenic centers. Show the mechanism of the reaction and draw a transition structure that clearly indicates how the stereoisomer is formed.



Example: Exercise Inorganic Chemistry

What are the products of the reaction of rhodium tetracarbonyl hydride $\text{HRh}(\text{CO})_4$ with one or two equivalents of a trialkylphosphine PR_3 , respectively. Draw the structures of all possible products, refer to the electronic changes at the metal centre and explain how many bands in the IR spectrum you would expect for the carbonyl stretch of each product.