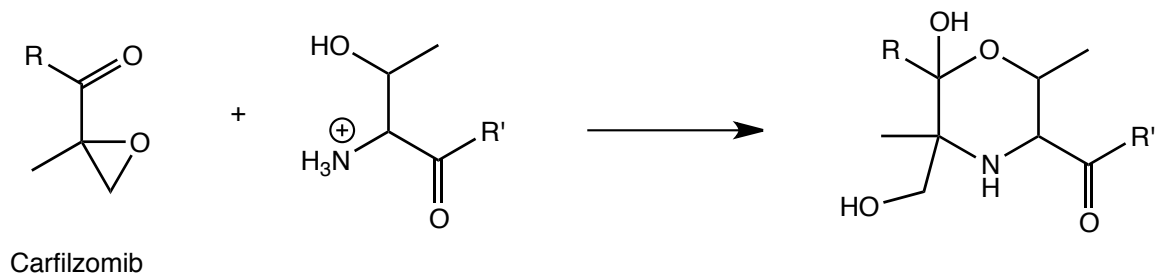


Study Question 3e

After you complete the mechanisms requested below, label each step with the type of reaction occurring: Ad_E , S_N1 , S_N2 , $E1$, $Ad_{Nu}C=O$ or AB (meaning acid-base or proton transfer).

Carfilzomib is a 20S proteasome inhibitor used to treat multiple myeloma. Carfilzomib reacts with a threonine on the proteasome as shown below. Draw a mechanism for this reaction.



It turns out there is more than one way carfilzomib can react with the same threonine. An alternative reaction outcome is shown below. Draw a complete mechanism for this reaction. Bonus: what term describes the relationship between the two final products?

