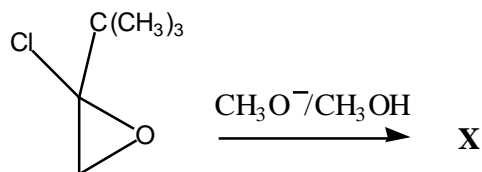


Problem Set #6
CH242-2002S

- [1] When the epoxide shown below was treated with sodium methoxide in methanol, a new compound **X** was obtained. The spectral data for **X** are given below. Propose a structure for **X** and a mechanism for its formation.

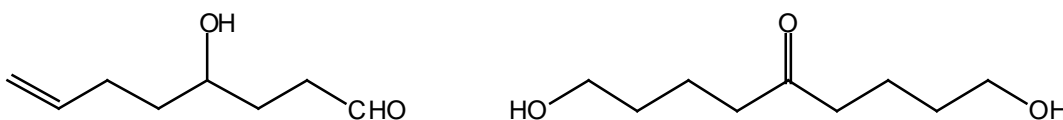


MS: *m/z* (relative intensity in parenthesis): 130 (4), 85 (12), 57 (100), 45 (31)

¹H NMR (ppm): 1.17 (s, 9H), 3.42 (s, 3H), 4.29 (s, 2H).

IR: strong signal at 1720 cm⁻¹

- [2] The following compounds are more stable in the form of their cyclic acetals or hemiacetals. Propose the correct cyclic structure for each compound.



- [3] Propose efficient synthetic routes to the following compounds from the indicated starting materials. In addition, you may use other reagents of your choice.

