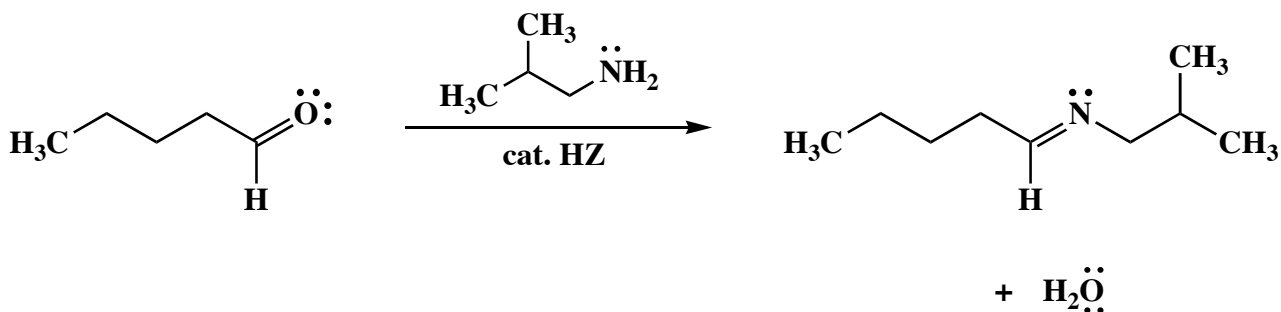


Problem Set 7

1. Draw the mechanism of the following reaction, using the curved-arrow notation to indicate the reorganization of electron density. Denote **all** intermediates, lone pairs, nonzero formal charges, countercharges, and reversibility or nonreversibility. Describe clearly why only a catalytic amount of the weak acid, HZ, is required. Finally, state what would occur if an excess of a strong acid was used instead of a weak acid.



2. Draw the mechanism of the following reaction, using the curved-arrow notation to indicate the reorganization of electron density. Denote **all** intermediates, lone pairs, nonzero formal charges, countercharges, and reversibility or nonreversibility. State why a cyclic structure is formed, instead of an acyclic acetal, formed by the reaction of two moles of methanol per mole of the δ -hydroxyaldehyde starting material. Also, describe clearly why only a catalytic amount of sulfuric acid is required.

