Group Meeting Questions

1) How would you convert this bromoaldehyde chemoselectively into the two products shown?

\[
\begin{align*}
\text{CHO} & \quad ? \quad \text{CHO} \\
\text{Br} & \quad ? \quad \text{Br} \\
\text{OH} & \quad \text{R} \\
\text{R} & \quad \text{OH}
\end{align*}
\]

2) The following is a general reaction for the formation of pyrroles. In this condensation, any of the three reaction constituents may be widely varied. (Ono, "The Nitro Group in Organic Synthesis" Wiley-VCH, 2001. Chapter 10, pp 326-328).
Provide a plausible mechanism for this transformation.

\[
\begin{align*}
\text{Me} & \quad \text{C} \quad \text{C} \\
\text{Me} & \quad \text{Ph} \quad \text{C} \quad \text{C} \\
\text{PH} & \quad \text{NO}_2 \\
\text{NH}_3 & \quad \rightarrow \\
\text{Me} & \quad \text{C} \\
\text{Me} & \quad \text{Ph} \quad \text{C} \\
\text{Me} & \quad \text{Me} \\
\end{align*}
\]

3) The oxidation of acetals by electrophilic ozone is known to be sensitive to structure. Two striking examples of different reactivity are detailed in the questions below.
Using clear three-dimensional drawings provide a rationale for the observation that rigid glycoside A readily undergoes oxidation but glycoside B does not. Be sure to indicate all relevant stereoelectronic interactions.

\[
\begin{align*}
\text{A} & \quad \text{O} \quad \text{O} \\
\text{H} & \quad \text{H} \\
\text{O} & \quad \text{H} \\
\text{O} & \quad \text{H} \\
\end{align*}
\]

\[
\begin{align*}
\text{A} & \quad \text{O} \quad \text{O} \\
\text{H} & \quad \text{H} \\
\text{O} & \quad \text{O} \\
\text{O} & \quad \text{O} \\
\end{align*}
\]