1. 

\[
\begin{align*}
\text{C}_{19}\text{H}_{23}\text{NO}_{3}\text{S} & \xrightarrow{\text{Br}_2, \text{MeOH, H}_2\text{O}} \text{C}_{19}\text{H}_{21}\text{NO}_{3}\text{S} \\
& \xrightarrow{\text{toluene, reflux}} \text{Me} \quad \text{MeOH} \\
& \text{O}^\circ \text{C} \\
\end{align*}
\]

77%


2. 

\[
\begin{align*}
\text{CHO} + \text{H}_2\text{N} + \text{CO}_2\text{Me} & \xrightarrow{\text{Sc(OTf)}_3, \text{microwave}} \text{N} \quad \text{H} \\
& \xrightarrow{\text{CH}_3\text{CN, rt to 125}^\circ\text{C}} \text{O} \\
\end{align*}
\]

82%


3. 

\[
\begin{align*}
\text{EtO}_2\text{OEt} + \text{OSiMe}_3 & \xrightarrow{\text{BF}_3\cdot\text{OEt}_2, \text{CH}_2\text{Cl}_2, -75^\circ\text{C}} \text{O} \\
& \xrightarrow{-75\text{ to rt}} \text{CF}_3\text{CO}_2\text{H} \\
\end{align*}
\]


4. 

\[
\begin{align*}
\text{CHO} + \text{K}_2\text{CO}_3 & \xrightarrow{\text{(HCHO)}_n, \text{MeOH, reflux}} \text{OH} \\
\end{align*}
\]


5. 

\[
\begin{align*}
\text{MeO}_2\text{C} & \xrightarrow{\text{toluene, reflux}} \text{MeO}_2\text{C} \\
\end{align*}
\]

M. J. Goldstein et al., Tetrahedron Lett., 6, 4413 (1965)

6. 

\[
\begin{align*}
\text{OH} & \xrightarrow{1) \text{TsCl (1.0 eq), Ph}_3\text{P (1.1 eq), Et}_3\text{N (10 eq), THF, rt}} \text{Me} \\
& \xrightarrow{2) \text{AgSbF}_6 (2 \text{ mol%), MeNO}_2, \text{rt}} \text{Me} \\
\end{align*}
\]