(S)-5-ethoxyhexane-2,4-dione

(CR)-3-hydroxy-2-methylbutanal

1-hydroxy-2,3-dioxobutanal

\[ \text{MCPBA} \]

\[ \text{Na}(\text{aq}) \]

\[ \text{Ammonia}(\text{aq}) \]

Jones Reactant - \( \text{CrO}_3, \text{H}_2\text{O}, \text{H}_2\text{SO}_4 \)

\[ \text{Cr}=\text{O} \rightarrow \text{Cr}=\text{O}^+ \rightarrow \text{Cr}^+\text{OH}^- \]

\[ \text{R-OH} \rightarrow \text{R} \]
Exam #1
- Alcohol → halide, bromide, iodide, sulfonate
- Dehydration of alcohols
- Oxidation - selective oxidation of α alcohols
  - Oxidation of α alcohols (POAO)
- Williamson ether synthesis (alkoxide formation)
- Reduction of aldehydes + ketones (LiAIH4 vs NaBD4)
- Epoxides - formation and opening
- Pinacol rearrangement
- Reactivity of aldehydes vs ketones
  - Formal charge vs oxidation state

Problems

Nomenclature
- Fill-in-the-blank
- Mechanism
- Synthesis theory

End of Exam 1
Although the same conditions that convert a ketal to a ketone will also convert the ketone to a hydrate, most hydrates are not thermodynamically favorable and will therefore not be isolatable.

Grignard (grin-yard)

\[ \text{Br}^- + \text{Mg} \rightarrow \text{MgBr}^- \quad \text{organometallic reagent} \]

Furan \[ \rightarrow \text{tetrahydro-furan (THF)} \]

1) \[ \text{CH}_3\text{MgBr} \rightarrow \text{OH} \]
2) \[ \text{H}^+ \rightarrow \text{new C-C bond}!! \]