

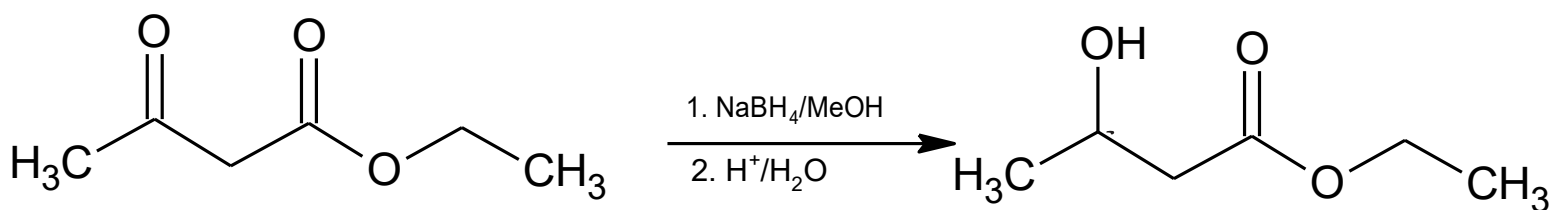
1.

2.

Reduction of Methyl Acetoacetate

1286

9/24/26



Catalytic Hydrogenation
Ni

Hydride Reducing Agents

LiAlH₄ NaBH₄

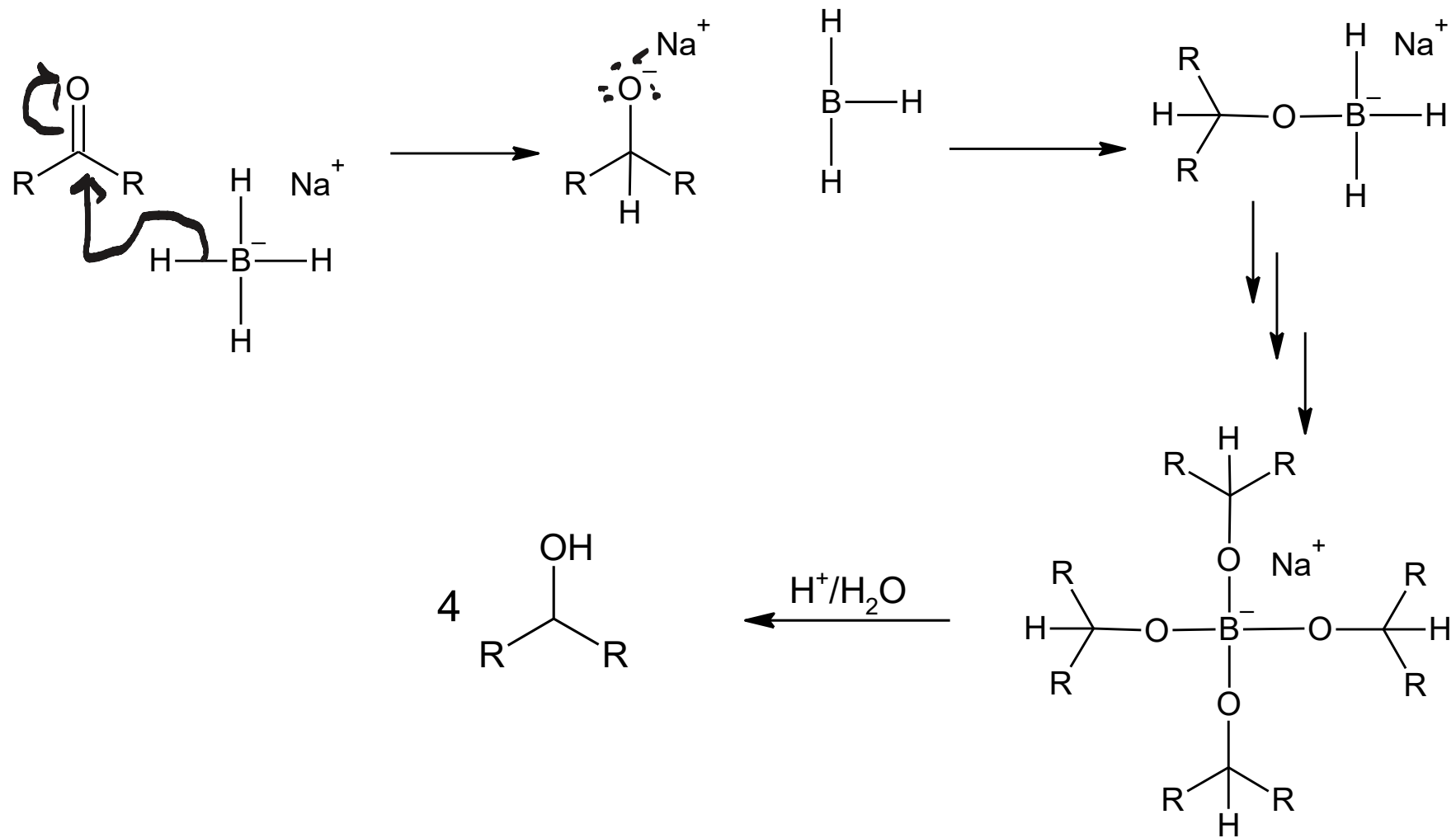
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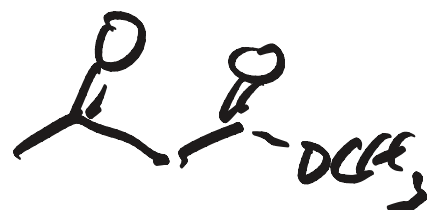
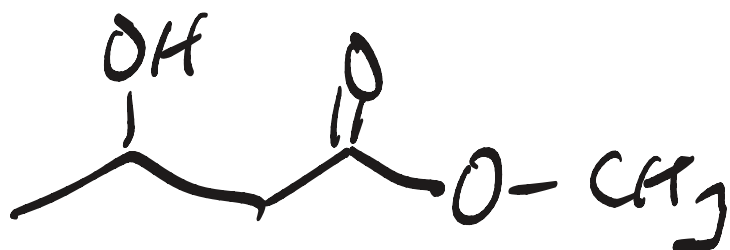
Comparison of Electronegativity Differences of Hydride Reducing Agents

Hydride Reducing Agent	Metal Electronegativity	Difference with Hydrogen*
LiH	0.98	1.1
CaH ₂	1.0	1.1
LiAlH ₄	1.5	0.6
NaBH ₄	2.0	0.1

* Hydrogen Electronegativity is 2.1

H[⊕]





90% yield

65% 30-50

IR, polarimetry

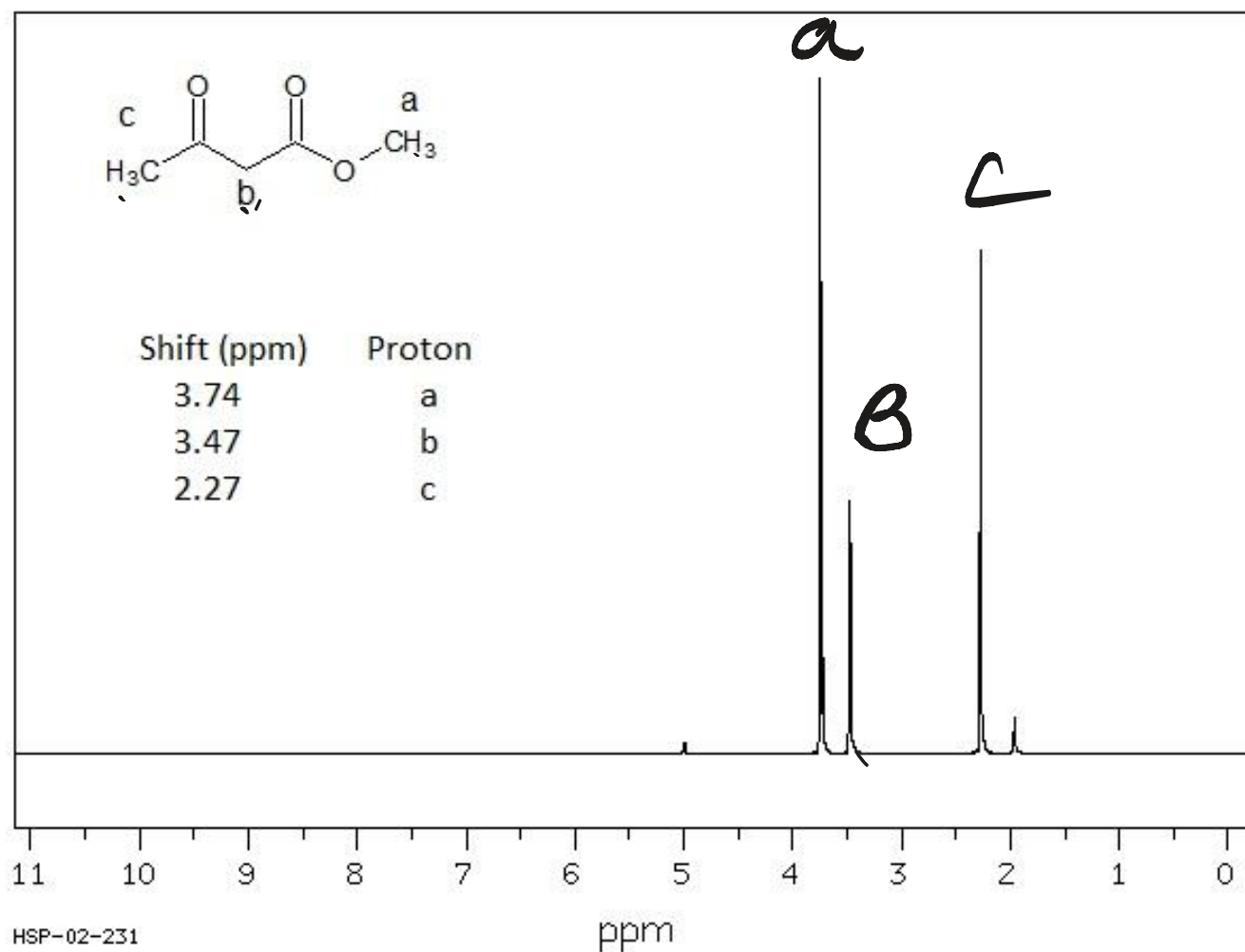
NMR

NMR Analysis

1. $\neq$ peaks / splitting
2. integration
3. Shift

$$3.6 \times \frac{3}{3.6}$$

Methyl Acetoacetate



Methyl 3-Hydroxybutyrate

