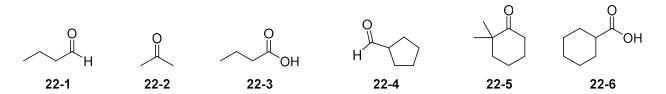
Chapters 22 & 23 Worksheet

I. Draw the product between each aldehyde, ketone, and carboxylic acid with reagents (a)-(e).



Chapter 22 reagents (Wednesday)

- (a) Br₂, HAc
- **(b)** Br₂, NaOH
- (c) 1. Br₂, PBr₃; 2. NaOH

Chapter 23 reagents (Thursday)

- (d) catalytic (cat.) NaOH, EtOH
- (e) 1 equiv. NaOH, EtOH, Δ

II. Draw the full arrow-pushing **mechanism** for the following reactions.

$$\begin{array}{ccc}
O & & Br_2 \\
& & & \\
HAC & & \\
\end{array}$$

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Draw the full arrow-pushing **mechanism** for the following reactions.