

1. (4 Pts, 2 pts each) Provide the structure for the following compounds.

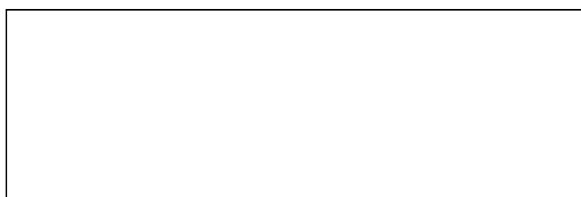
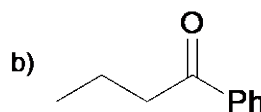
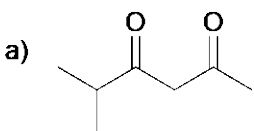
a) (R)-3-hydroxycyclohexanone



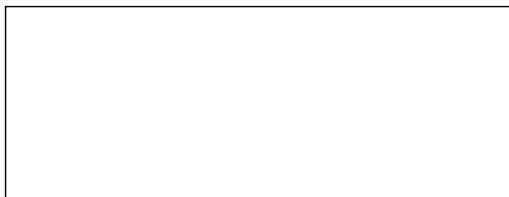
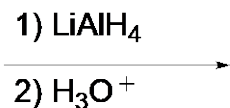
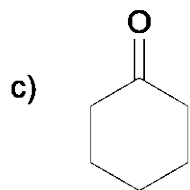
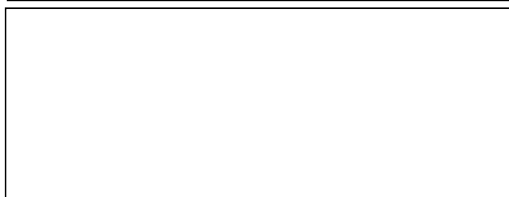
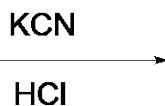
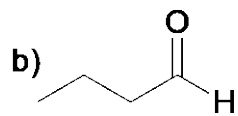
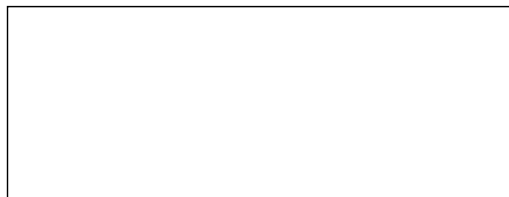
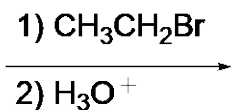
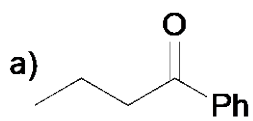
b) Acetaldehyde



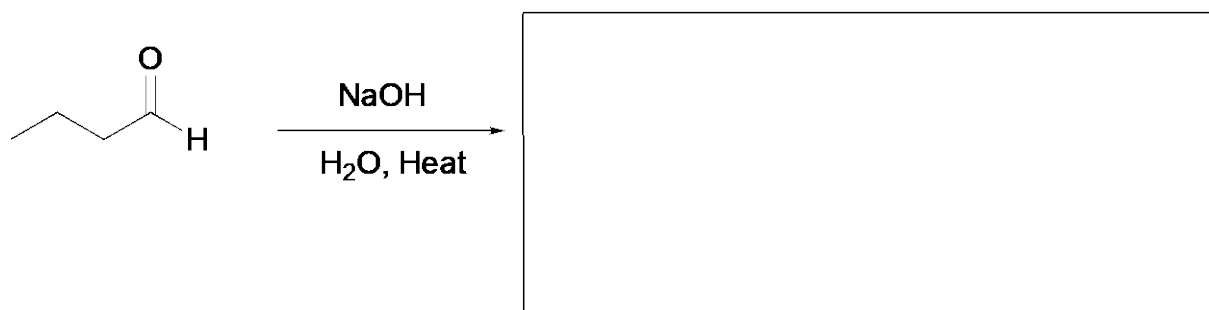
2. (4 Pts, 2 pts each) Give the IUPAC name for the following compounds.



3. (6 Pts, 2 pts each) Complete the following chemical transformations.



4. (6 Points total) Provide a stepwise mechanism for the following Aldol condensation reaction.



**Product (2 Points)**

**Mechanism (4 Points):**