

Problems - Set 8 : Carbonyl compounds (part III)

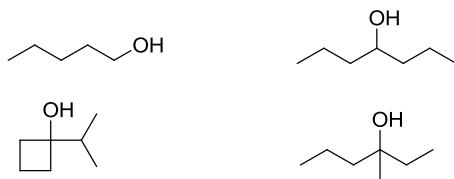
Problem 1

Write the mechanisms and the structures of the products of the following reactions involving Grignard reagents.

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|---|---|
| (a) $\text{C}_6\text{H}_5\text{MgBr} + \text{C}_6\text{H}_5\text{CHO}$ | (b) $\text{CH}_3\text{MgI} + \text{CH}_3\text{CH}_2\text{CO}_2\text{C}_2\text{H}_5$ |
| (c) $(\text{CH}_3)_3\text{CMgCl} + \text{CO}_2$ | (d) $\text{CH}_3\text{CH}_2\text{MgBr} + \text{ClCO}_2\text{C}_2\text{H}_5$ |
| (e) $\text{CH}_3\text{MgCl} + \text{CH}_3\text{COCH}_2\text{CH}_2\text{CO}_2\text{C}_2\text{H}_5$ (1:1) | (f) $\text{C}_6\text{H}_5\text{MgBr} + \text{CH}_3\text{OCOOCH}_3$ |
| (g) $\text{CH}_3\text{MgBr} + (\text{CH}_3)_2\text{CHCN}$ | (h) $\text{C}_6\text{H}_5\text{MgBr} + \text{HOCH}_2\text{CH}_2\text{COCH}_3$ |

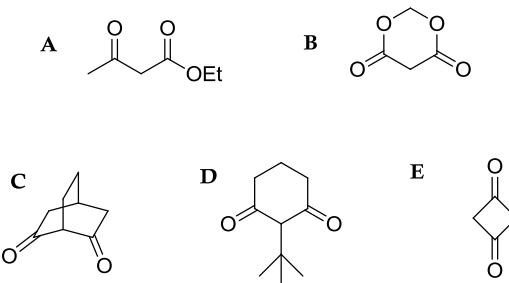
Problem 2

How to make these compounds using Grignard reagents from starting materials that have maximum 4 carbons each.



Problem 3

1,3-Dicarbonyl compounds such as A are mostly enolized. Why? Draw the enols of compounds B-E and explain why B prefers the enol form whereas C, D and E prefer the ketone form.



Problem 4

Arrange each series of compounds in order of decreasing acidity at the alpha-position.

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|---|
| a) $\text{CH}_3\text{CH}_2\text{NO}_2$, $\text{CH}_3\text{CH}_2\text{CN}$, $\text{CH}_2(\text{CN})_2$, |
| b) |
| c) |