

Problem 19.9

Cyclohexanone forms a cyanohydrin in good yield but 2,2,6-trimethylcyclohexanone does not. Explain.

Problem 19.10

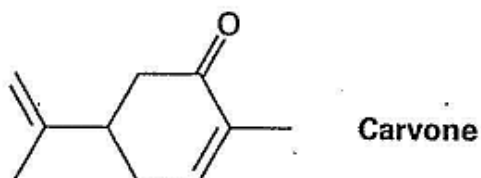
Show the products you would obtain by acid-catalyzed reaction of cyclohexanone with ethylamine, $\text{CH}_3\text{CH}_2\text{NH}_2$, and with diethylamine, $(\text{CH}_3\text{CH}_2)_2\text{NH}$.

Problem 19.20

Assign *R* or *S* stereochemistry to the two chirality centers in isocitrate, and tell whether OH and H add to the *Si* face or the *Re* face of the double bond.

Problem 19.40

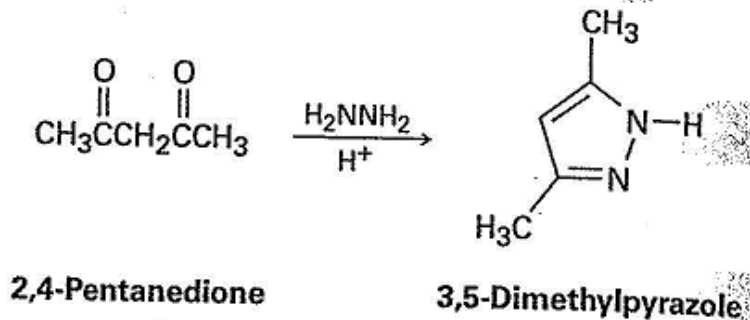
Carvone is the major constituent of spearmint oil. What products would you expect from reaction of carvone with the following reagents?



- | | |
|--|---|
| (a) $(\text{CH}_3)_2\text{Cu}^- \text{Li}^+$, then H_3O^+ | (b) LiAlH_4 , then H_3O^+ |
| (c) CH_3NH_2 | (d) $\text{C}_6\text{H}_5\text{MgBr}$, then H_3O^+ |
| (e) H_2/Pd | (f) CrO_3 , H_3O^+ |
| (g) $(\text{C}_6\text{H}_5)_3\text{P}^+ \text{CHCH}_3^-$ | (h) $\text{HOCH}_2\text{CH}_2\text{OH}$, HCl |

Problem 19.61

Propose a mechanism to account for the formation of 3,5-dimethylpyrazole from hydrazine and 2,4-pentanedione. Look carefully to see what happened to each carbonyl carbon in going from starting material to product.



Problem 19.75

The Wharton reaction converts an epoxy ketone to an allylic alcohol by reaction with hydrazine. Propose a mechanism. (*Hint: Review the Wolff-Kishner reaction in Section 19.9.*)

