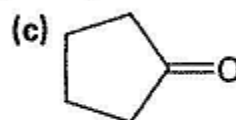
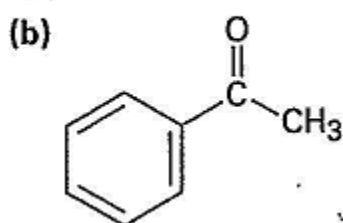
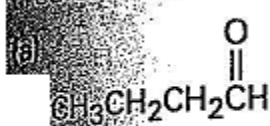
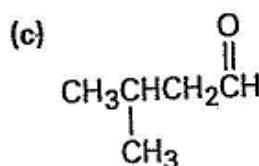
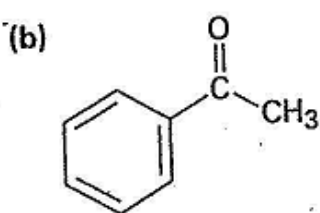
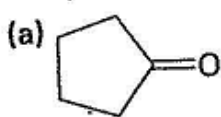


Problem 23.1

Predict the aldol reaction product of the following compounds:

**Problem 23.3**

What enone product would you expect from aldol condensation of each of the following compounds?

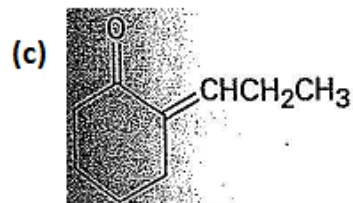
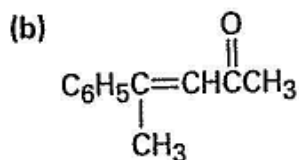
**Problem 23.5**

Which of the following compounds are aldol condensation products? What is the aldehyde or ketone precursor of each?

- (a) 3-hydroxy-2-methylpentanal (b) 5-Ethyl-4-methyl-4-hepten-3-one

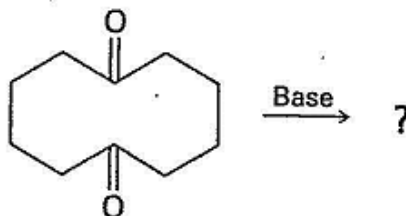
Problem 23.8

Which of the following compounds can probably be prepared by a mixed aldol reaction? Show the reactants you would use in each case.



Problem 23.10

What product would you expect to obtain from base treatment of 1,6-cyclodecanedione?



1,6-Cyclodecanedione

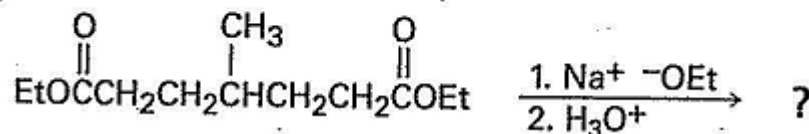
Problem 23.11

Show the products you would expect to obtain by Claisen condensation of the following esters:

- (a) $(\text{CH}_3)_2\text{CHCH}_2\text{CO}_2\text{Et}$ (b) Ethyl phenylacetate (c) Ethyl cyclohexylacetate

Problem 23.14

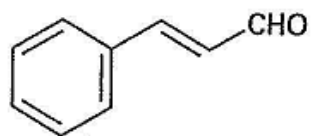
What product would you expect from the following reaction?

**Problem 23.30**

Intramolecular aldol cyclization of 2,5-heptanedione with aqueous NaOH yields a mixture of two enone products in the approximate ratio 9:1. Write their structures, and show how each is formed.

Problem 23.35

Cinnamaldehyde, the aromatic constituent of cinnamon oil, can be synthesized by a mixed aldol condensation. Show the starting materials that could be used for this synthesis and write the mechanism of the reaction.

**Cinnamaldehyde**