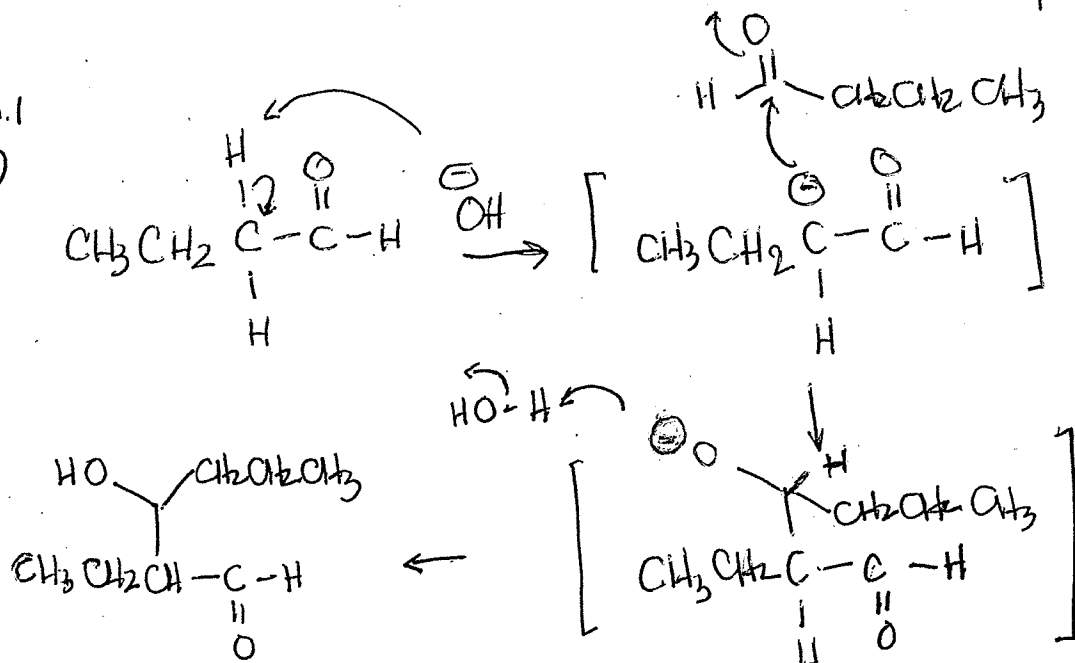
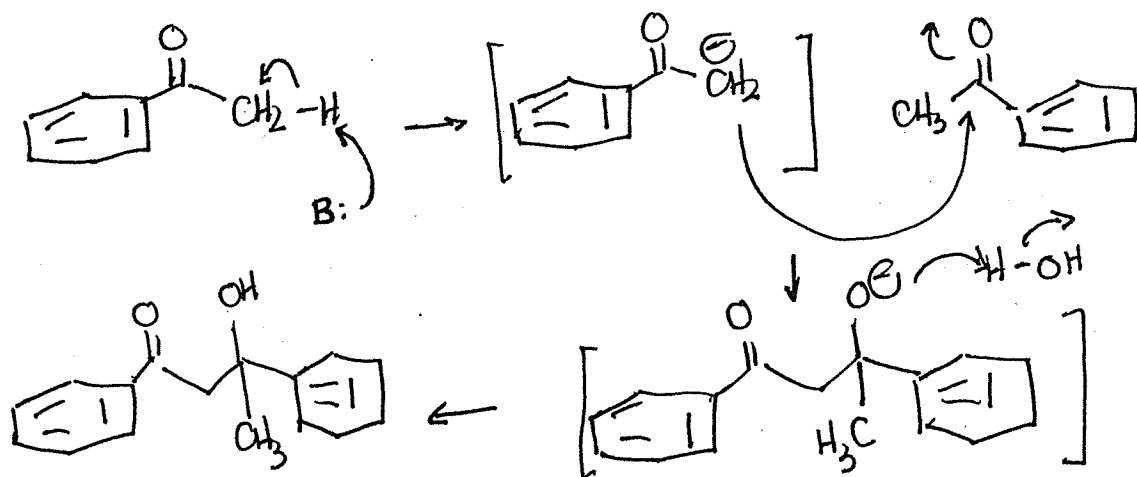


PROBLEM SET #24

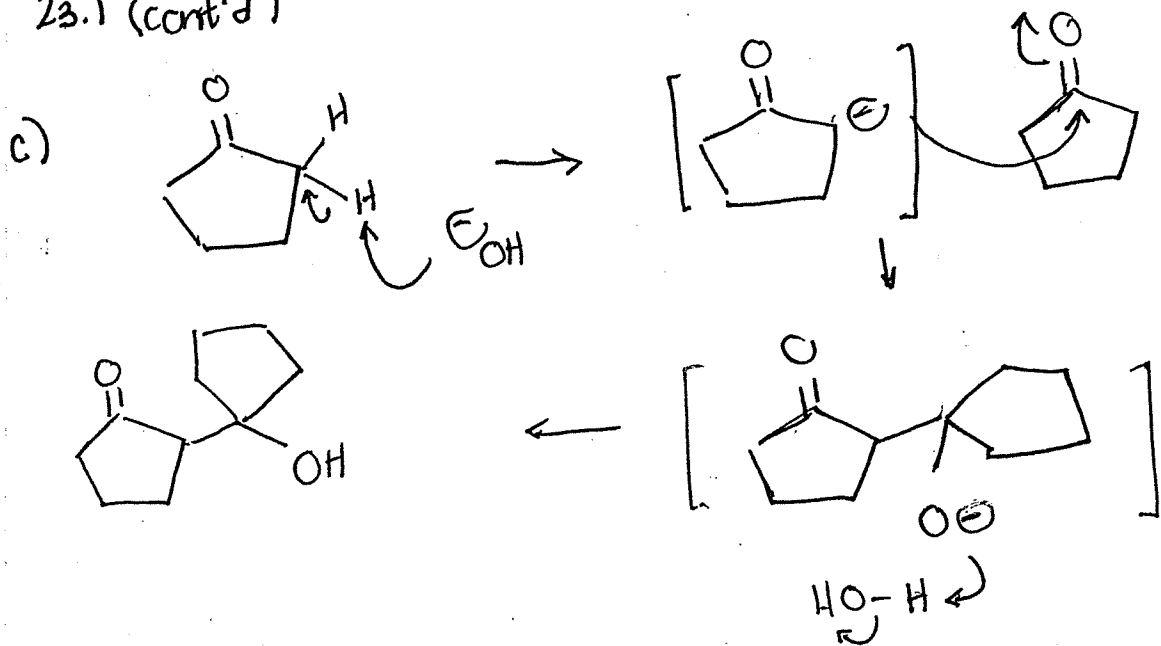
23.1
a)



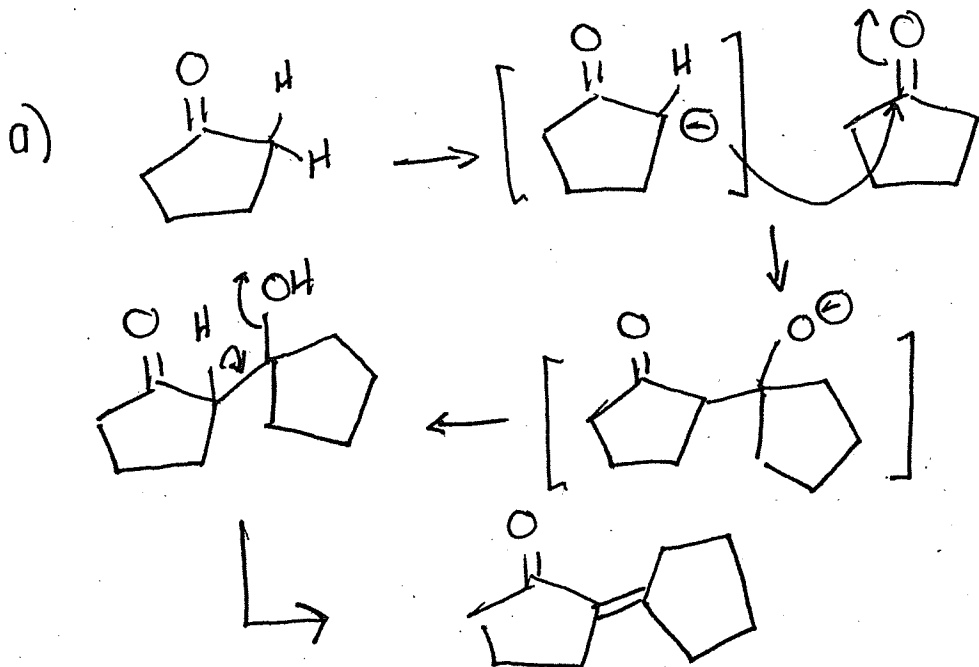
b)



23.1 (cont'd)

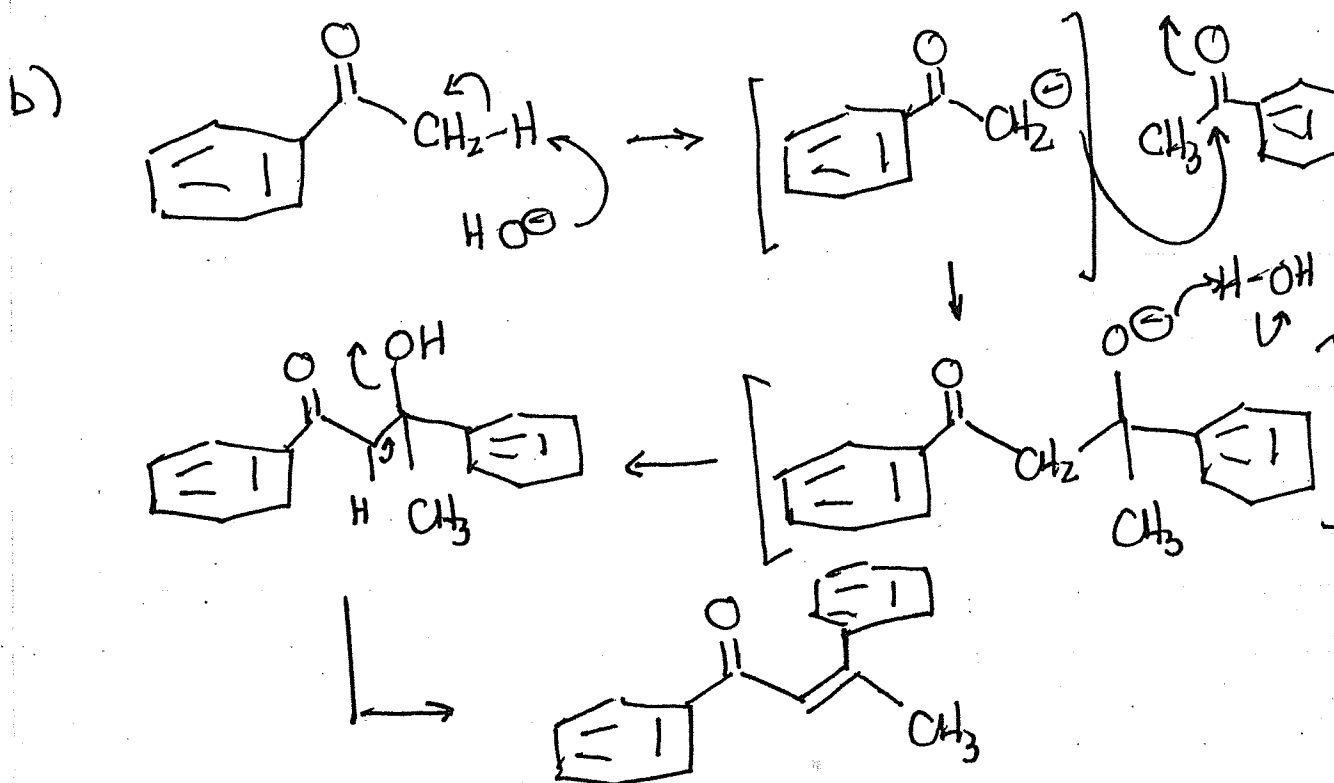
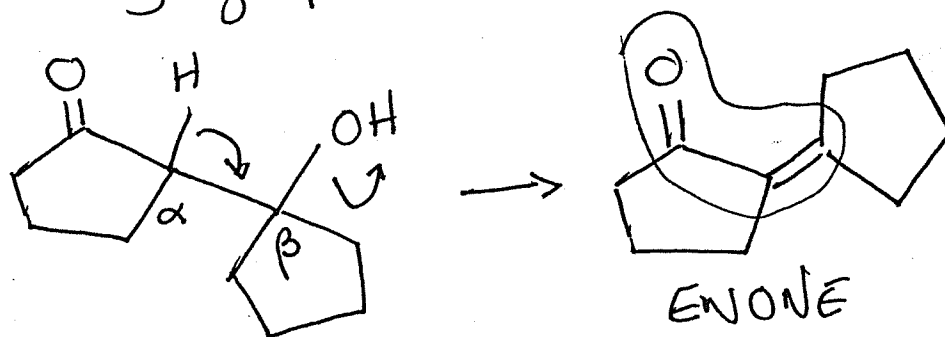


23.3 Enones are generated when the initial product of the aldol (β -hydroxy carbonyl) continues to react in an elimination

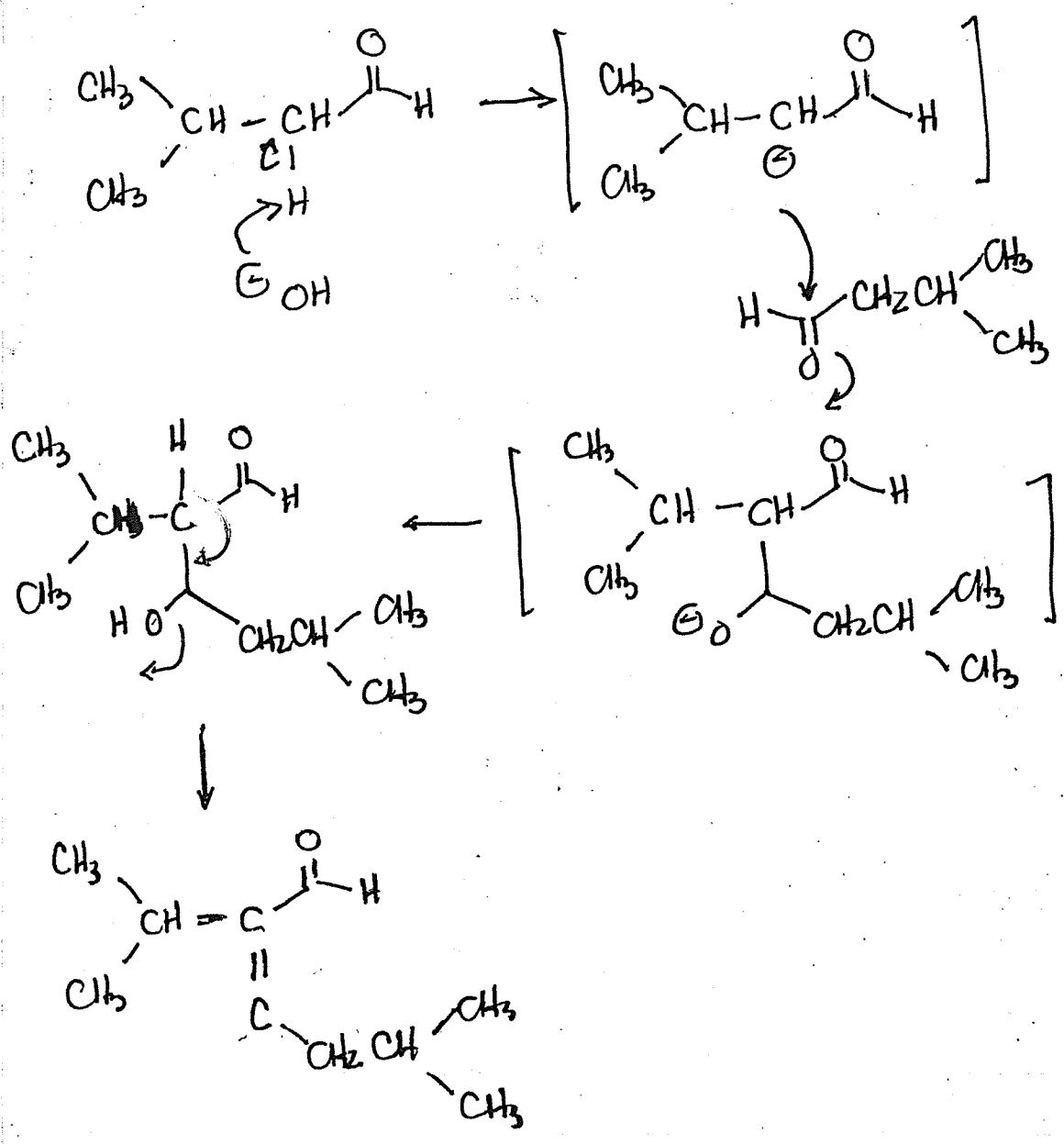


23.3 (cont'd)

The elimination occurs between the α -carbon (H is lost) and the β -carbon bonded to the OH group. The OH group is "leaving group".

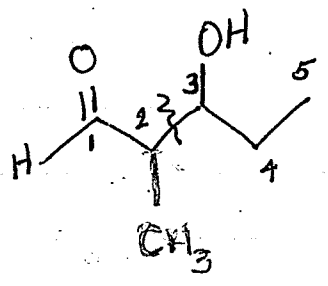


23.3 (cont'd)

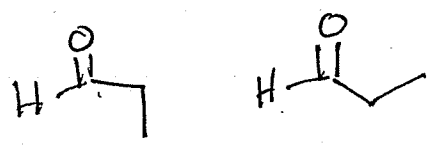


23.5

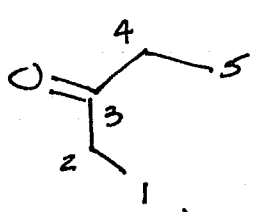
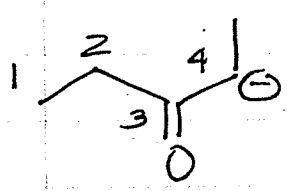
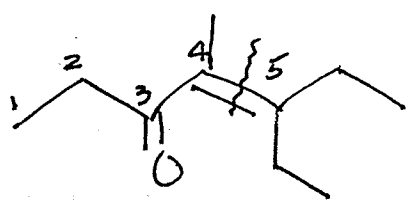
a) 3-hydroxy-2-methylpentanal



Bond between α -C and β -C (bonded to hydroxyl) formed by rxn of enolate w/ carbonyl



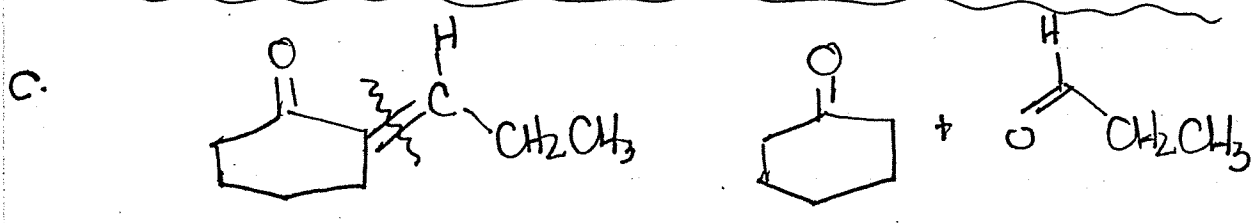
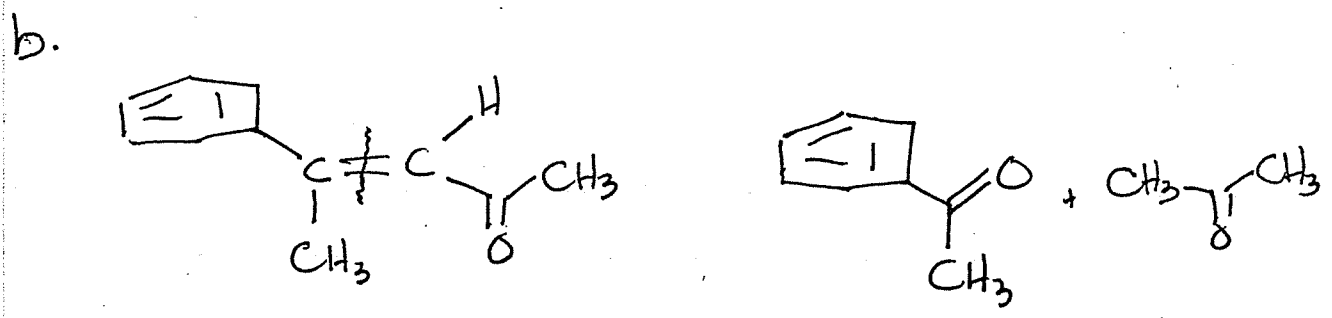
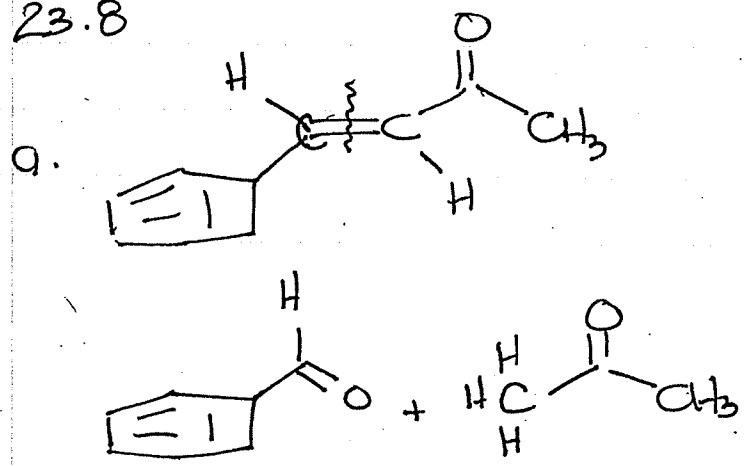
b)



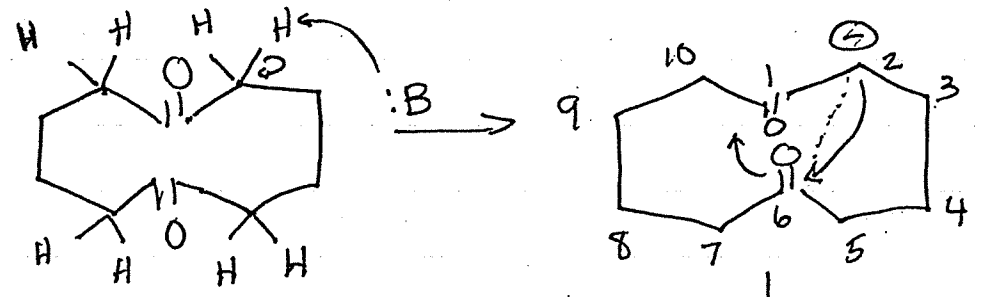
3-pentanone

The alkene in the enone product of an aldol rxn is between the α -C of the enolate and the carbonyl carbon of the electrophile

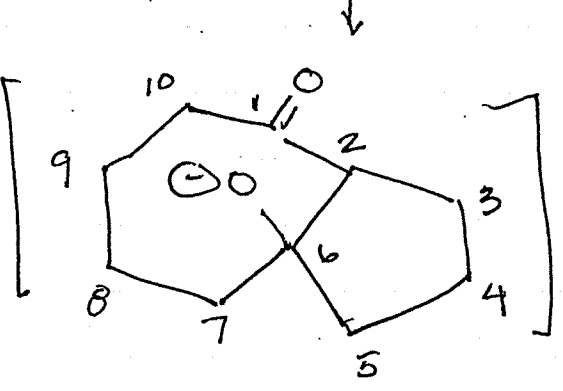
23.8



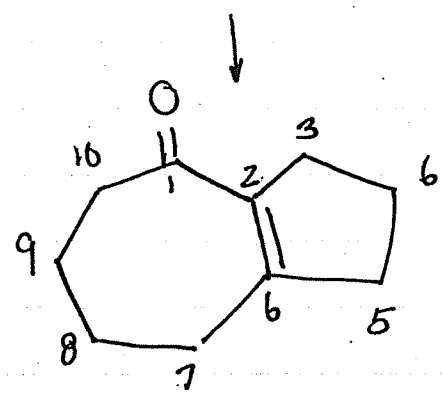
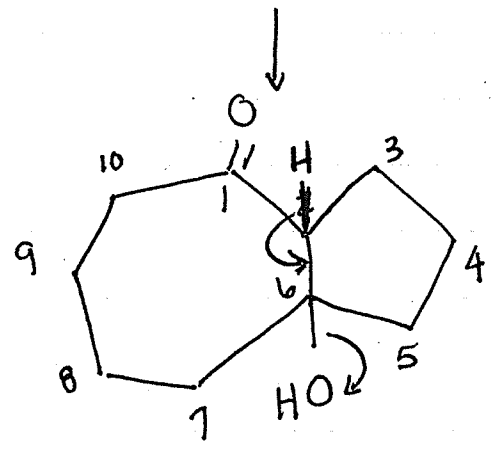
23.10



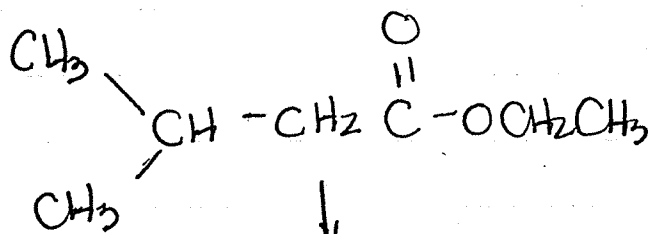
INTRAMOLECULAR
ALDOL



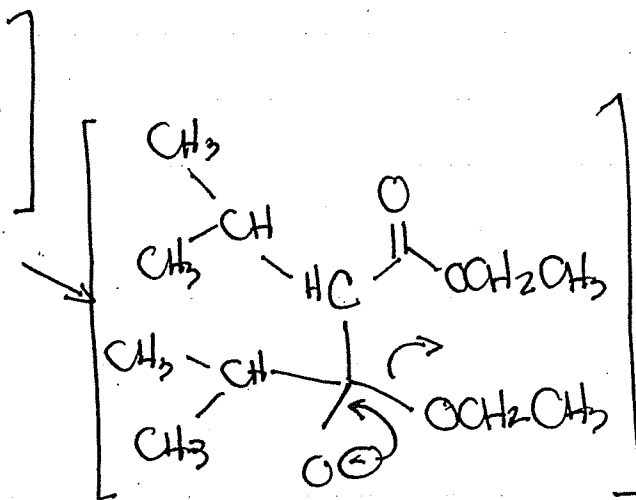
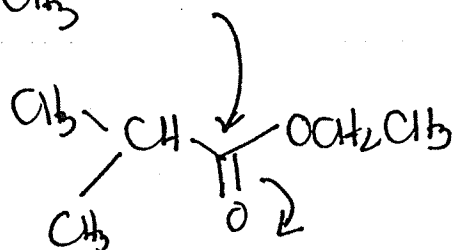
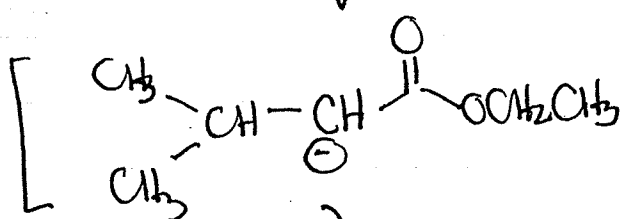
Enolate generated at C₂ and attacks carbonyl at C₆
5-membered ring



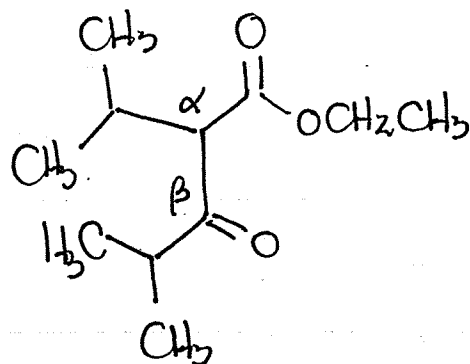
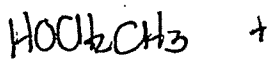
23.11



Et = CH₂CH₃
ethyl



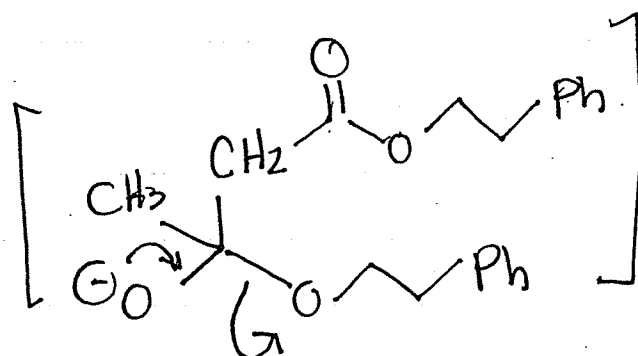
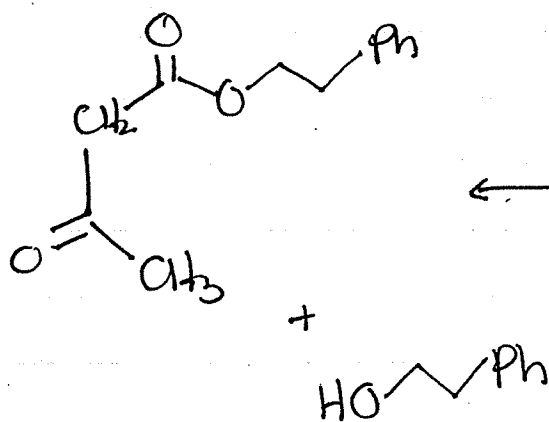
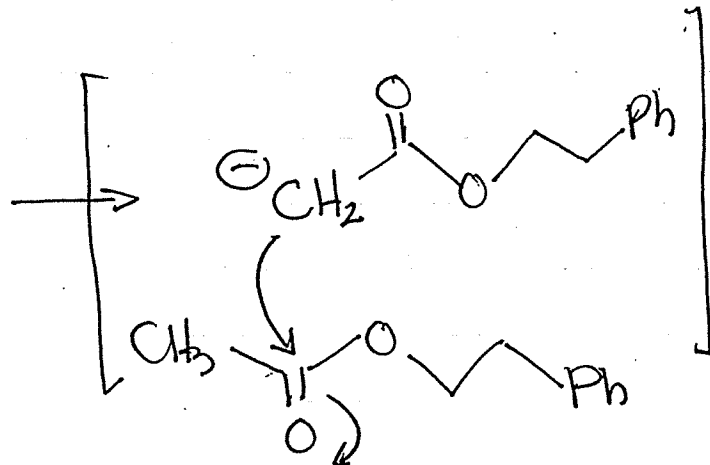
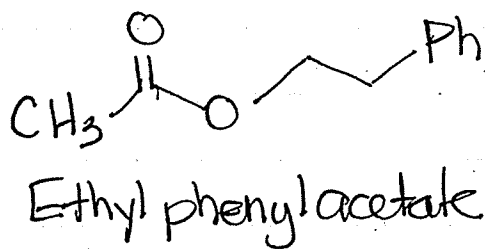
In the Claisen condensation,
the enolate reacts w/
carbonyl of 2nd ester in
a Nu: Acyl Substitution



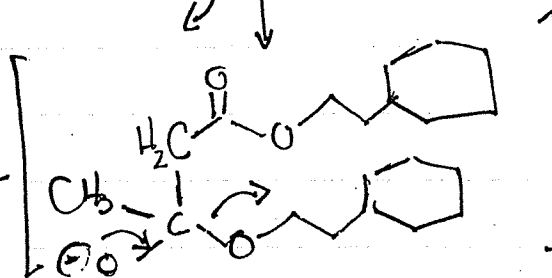
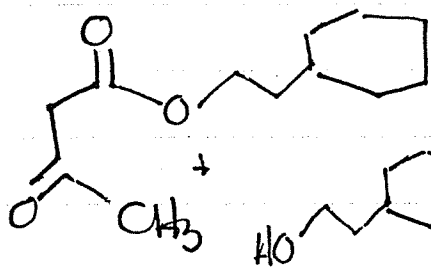
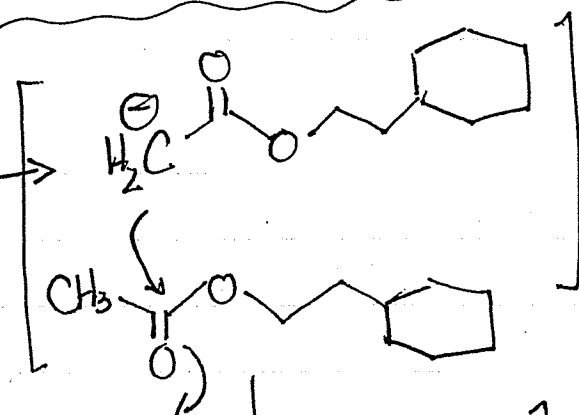
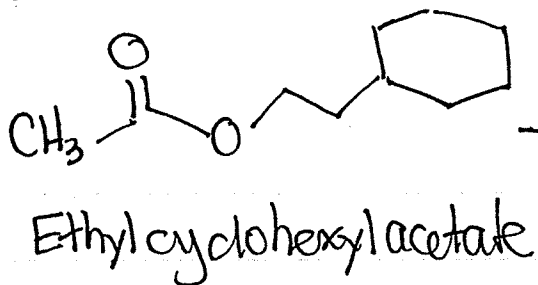
β-dicarbonyl

23.11 (cont'd)

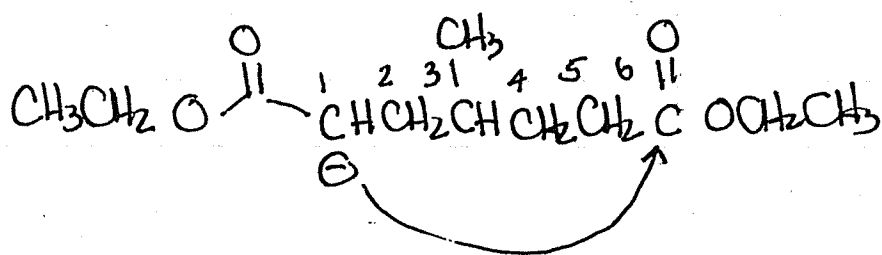
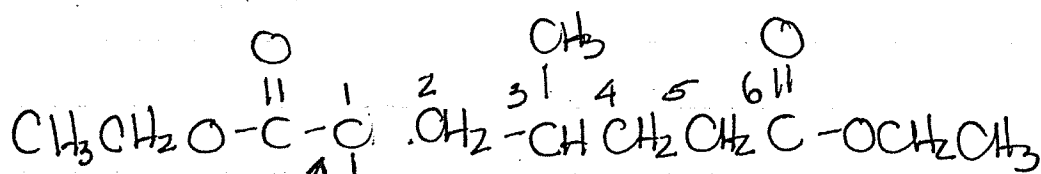
b)



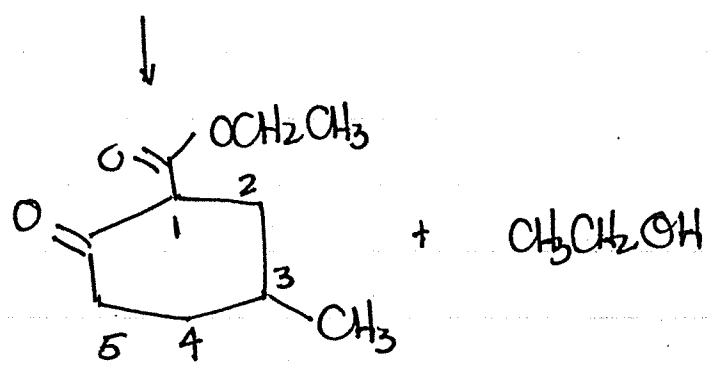
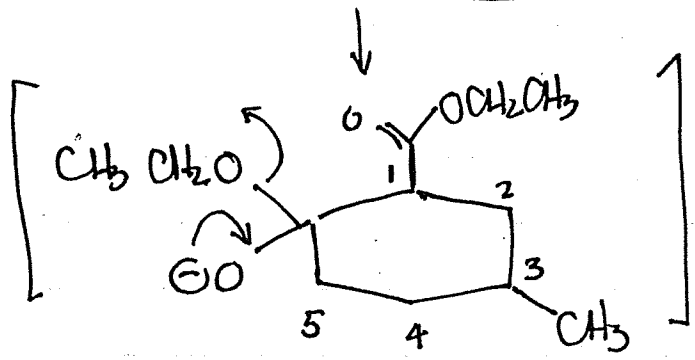
c)



23.14

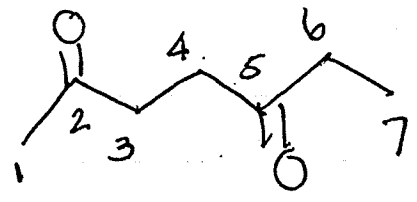


Enolate generated
INTRAMOLECULAR
CLAISEN
forms a 6-
membered ring



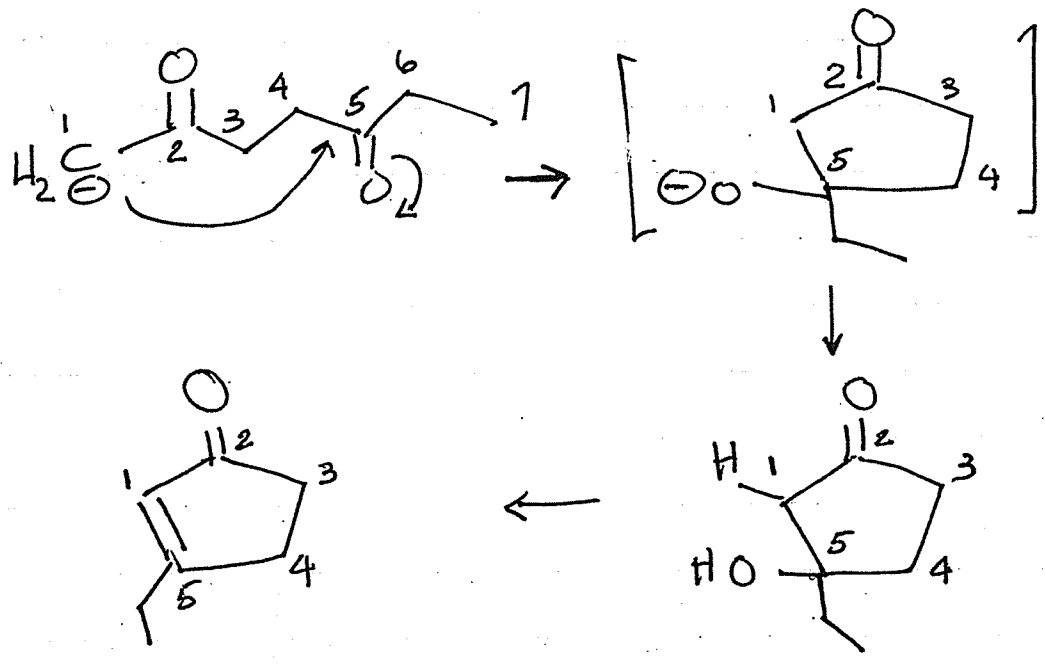
23.30

2,5-heptadione

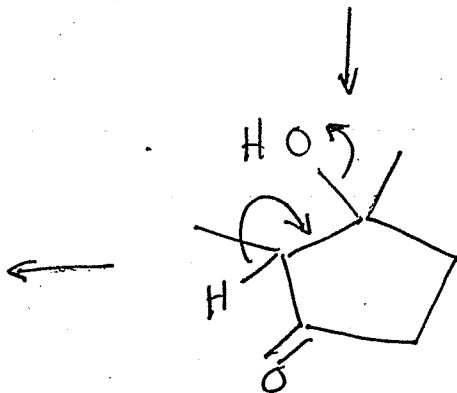
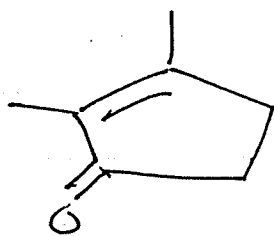
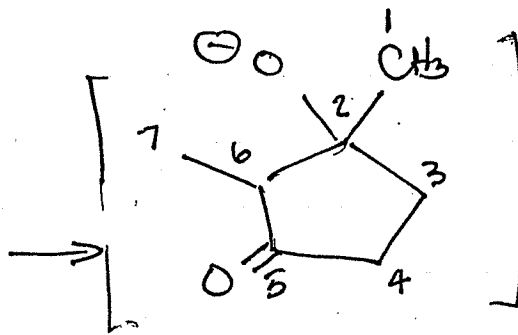
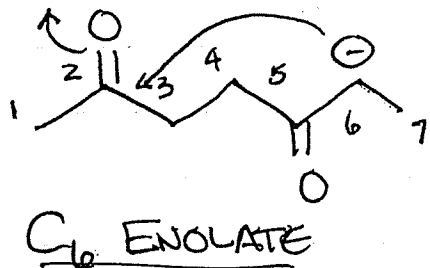


Enolates generated at C₁ and C₆ can each react in an intramolecular condensation to form 5-membered rings.

C₁ ENOLATE

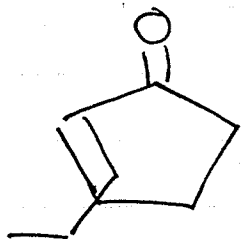


23.30 (cont'd)



Two enones are formed

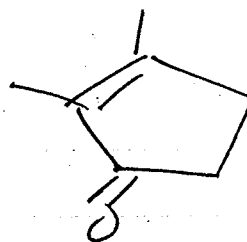
from C₁
Enolate



trisub. alkene

1

from C₄
enolate

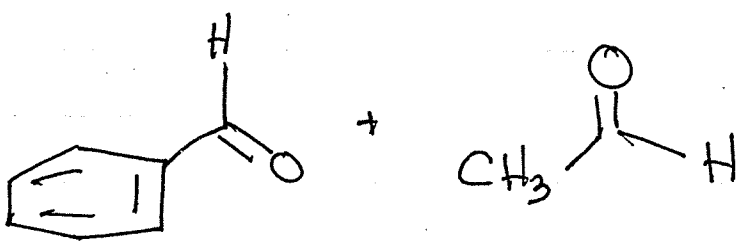
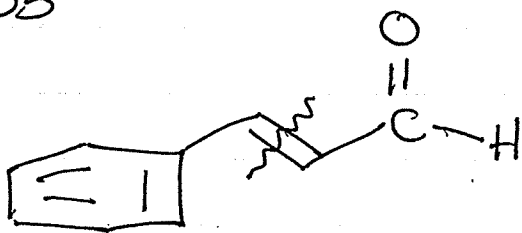
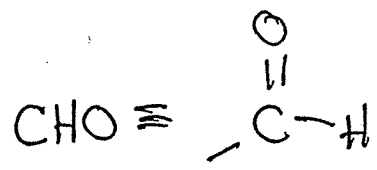


tetrasub
alkene

MORE STABLE

9

23.35



MECHANISM:

