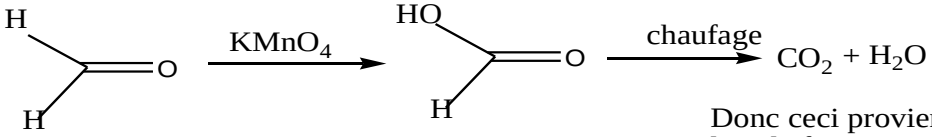
Correction d'examen chimie organique fonctionnelle

Filière SMC S5 / Janvier 2016

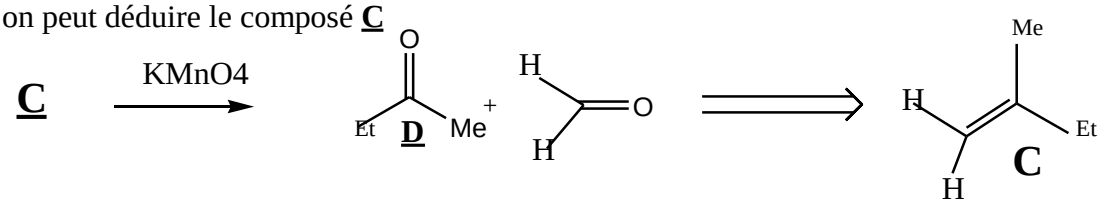
Exercice 1

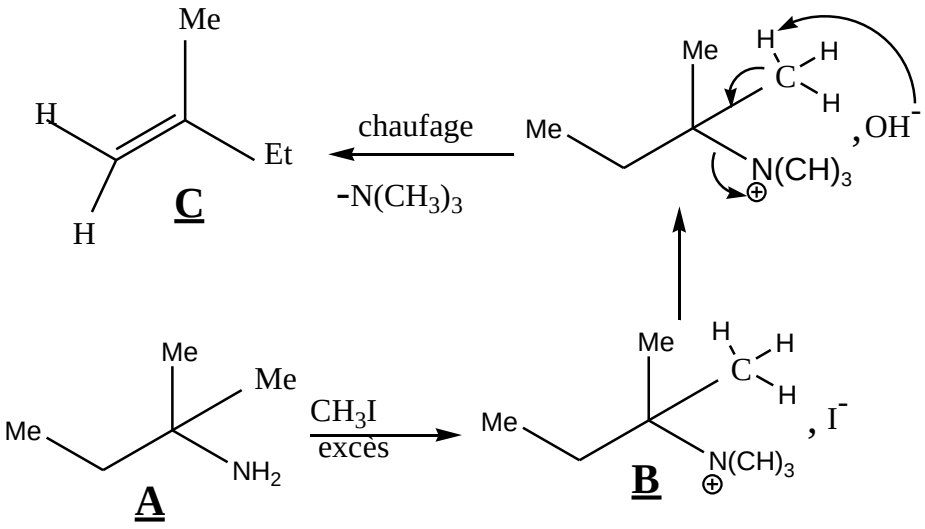
1) $A = C_5H_{13}N \xrightarrow[\text{excès}]{CH_3I} B \xrightarrow[H_2O]{Ag_2O} C + N(CH_3)_3 \xrightarrow{KMnO_4} CO_2 + H_2O + D$



Donc ceci provient de l'oxydation de l'acide formique qui provient aussi de l'oxydation du formaldéhyde

Et on peut déduire le composé **C**





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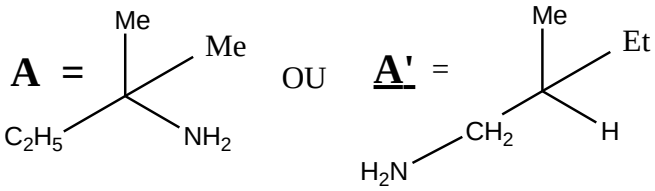
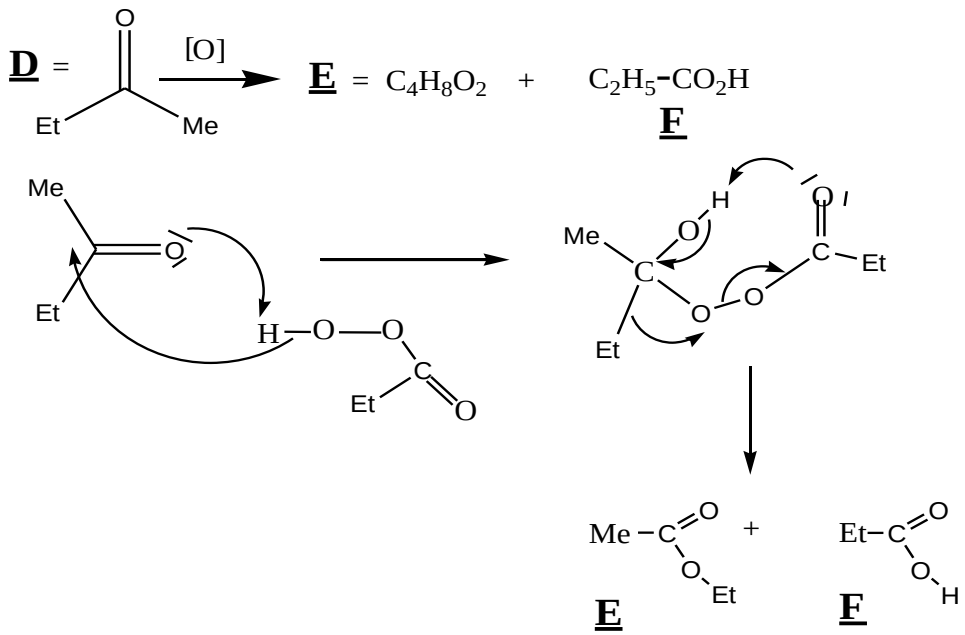


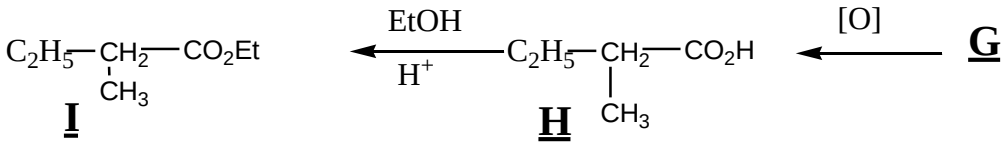
3)

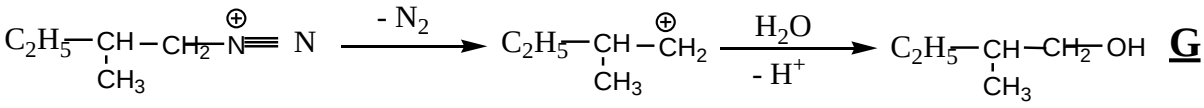


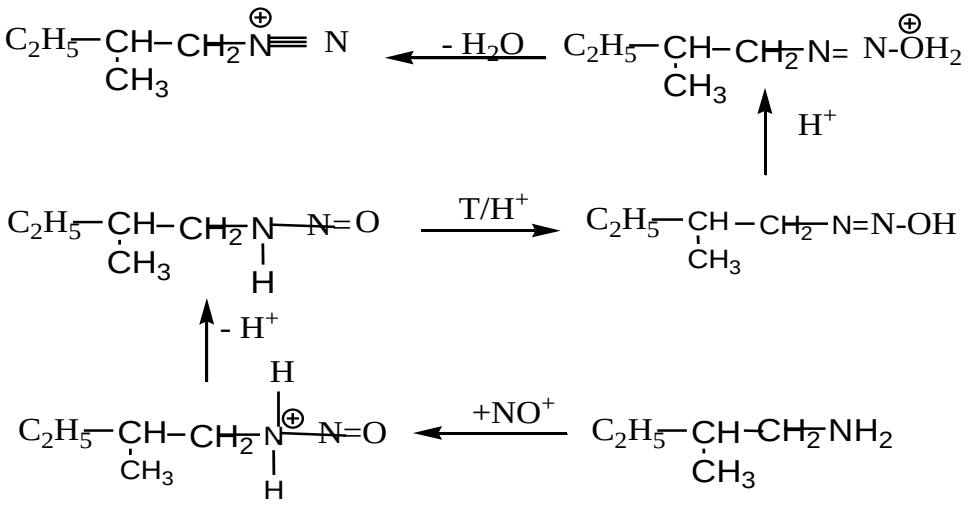
4) Réaction : oxydation de **Baeyer villiger**

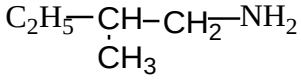
Mécanisme voir 3)

5)

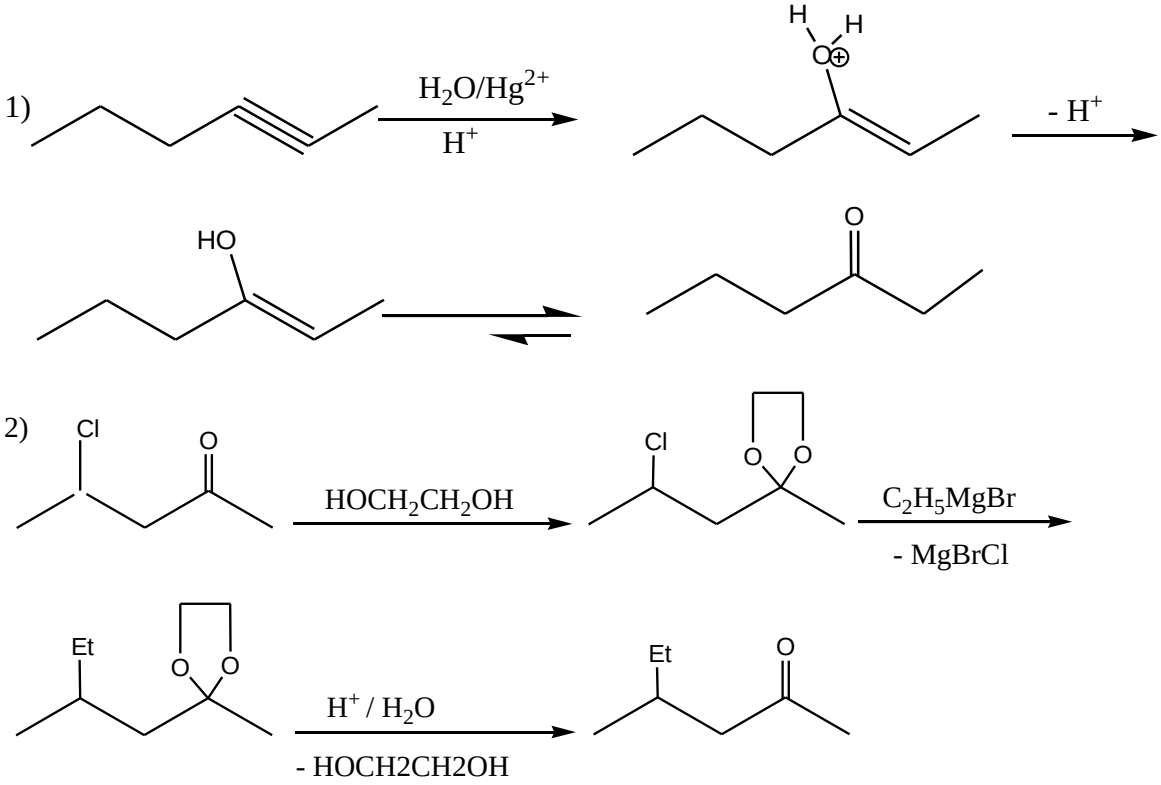




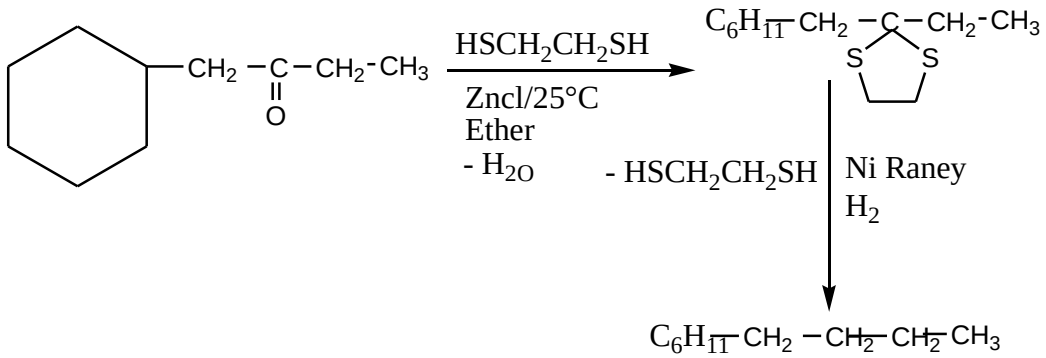


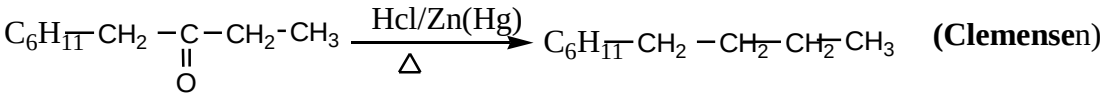
Donc l'unique structure de A est 

Exercice 2

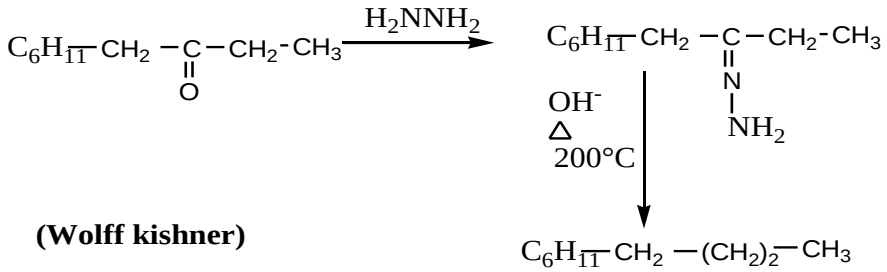


3) a)

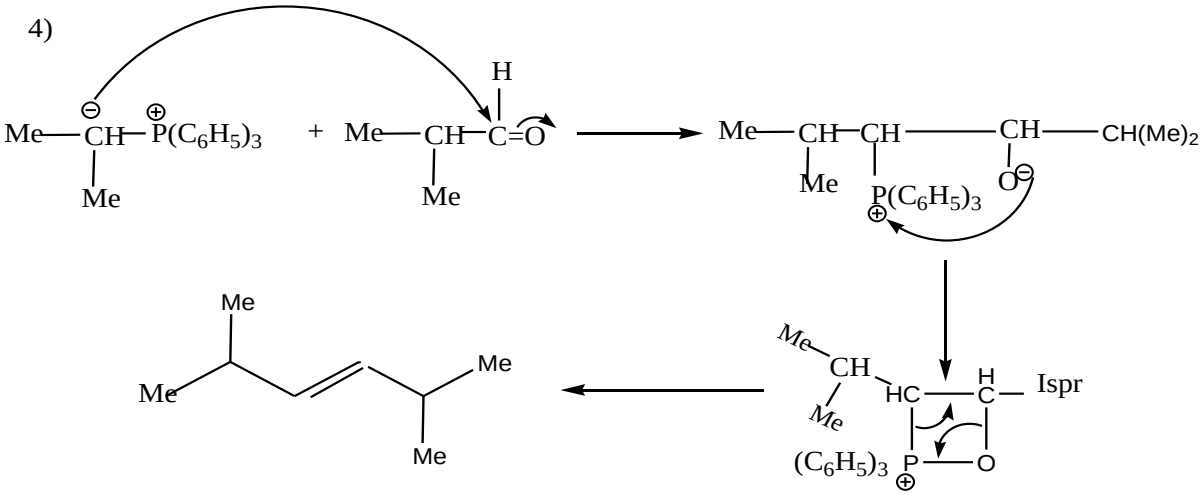


b) 

(Clemensen)

c) 

(Wolff kishner)

4) 

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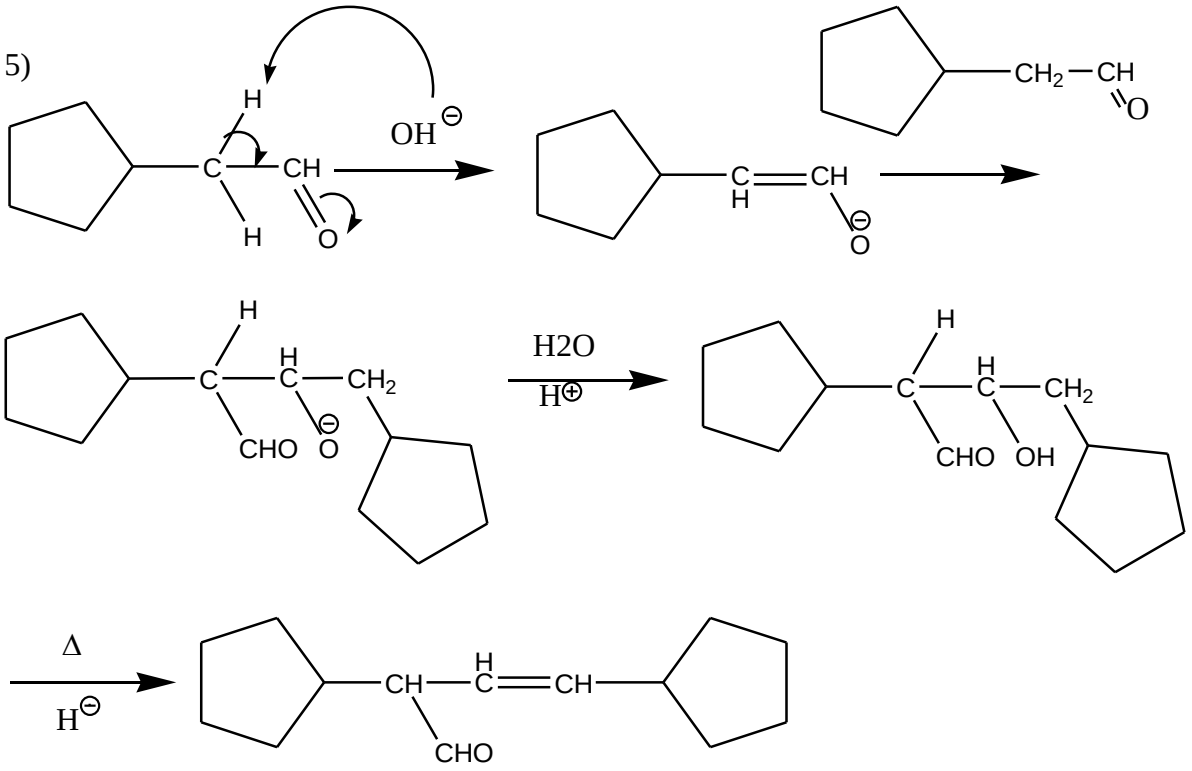


II) Nom des réactions : **1)** Hydratation d'un alcyne

2) Substitution par protection du carbonyle

3) Réduction d'un carbonyle en CH_2 :

-a) Réduction par l'éthane-1,2-dithiol

-b) Clemensen

-c) Wolff kishner

4) Réaction de Wittig

5) Aldolisation

<u>Exercice 3</u>

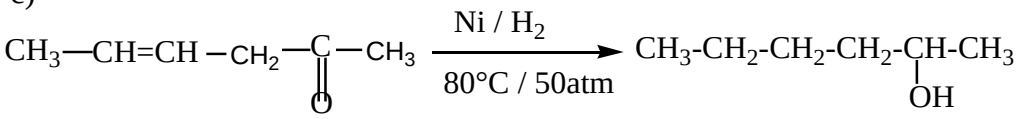
1)

a) $C_2H_5\text{-}\underset{\displaystyle H}{\overset{\displaystyle |}{C}}{=}O \xrightarrow[EtOH]{NaBH_4} C_2H_5\text{-}CH_2OH + B(OH)_3 + NaOH$

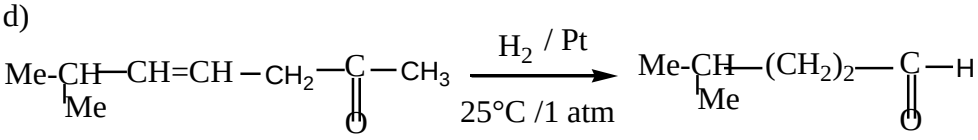
b) $Et\text{-}\underset{\displaystyle H}{\overset{\displaystyle |}{C}}{=}O \xrightarrow[EtOH]{LiAlH_4} Al(OEt)_3 + Li(OEt) + Et\text{-}\underset{\displaystyle H}{\overset{\displaystyle |}{C}}{=}O$

Le solvant protique EtOH réagit avec $LiAlH_4$ alors qu'il ne réagit pas avec <u>$NaBH_4$</u>

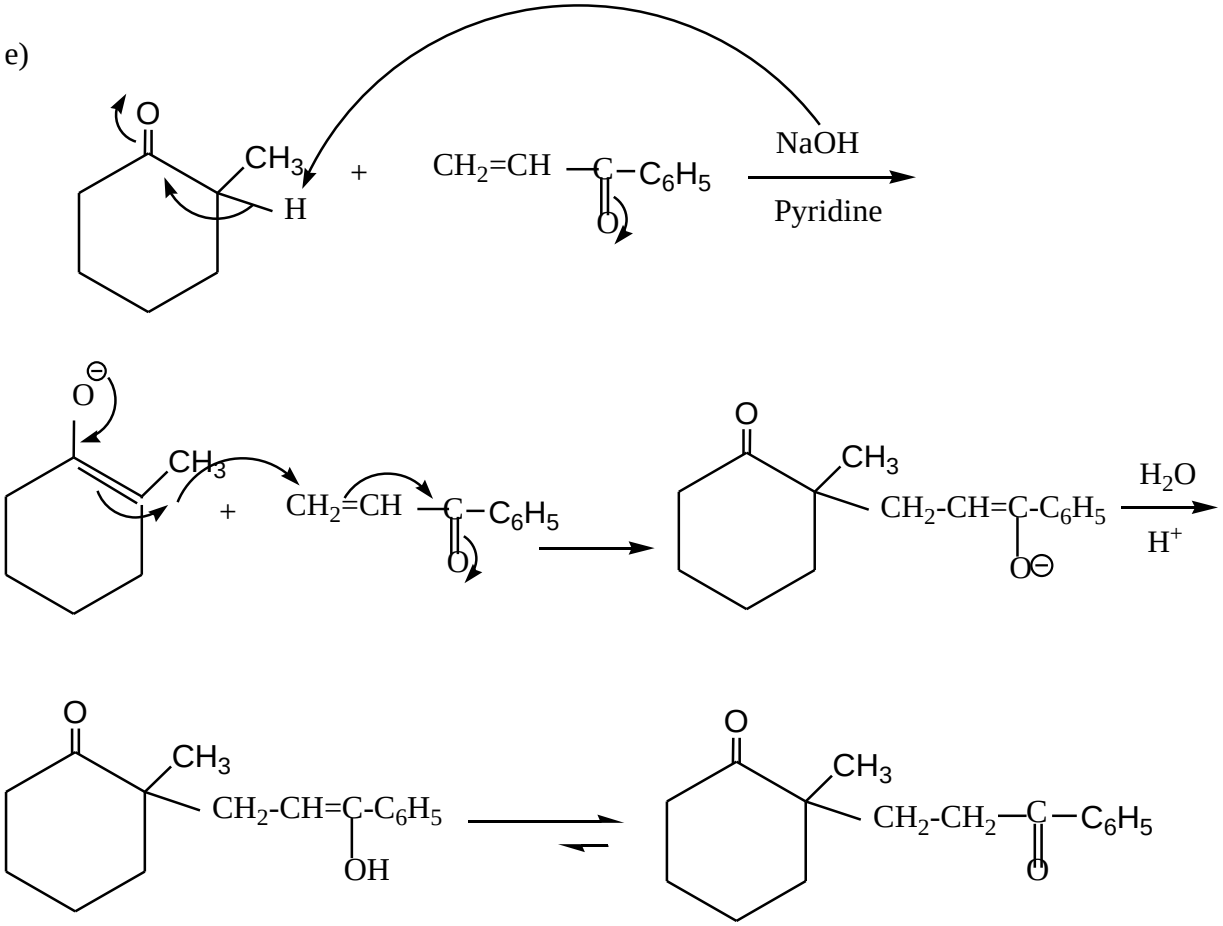
c)



d)



e)



2) C'est l'addition de Michael d'un énolate sur un carbonyle α, β éthylénique.