Correction TD C6.4 - Additions nucléophiles - TB1

* Exercice 1 :

① $MgCl_2$: Electrophile sur Mg : δ^+

② $Cl^\ominus$: Nucléophile : charge $\ominus$ + doublet

③ NH_3 : Nucléophile sur N : doublet + $\delta^\ominus$

④ éthanal : Electrophile sur C : δ^+

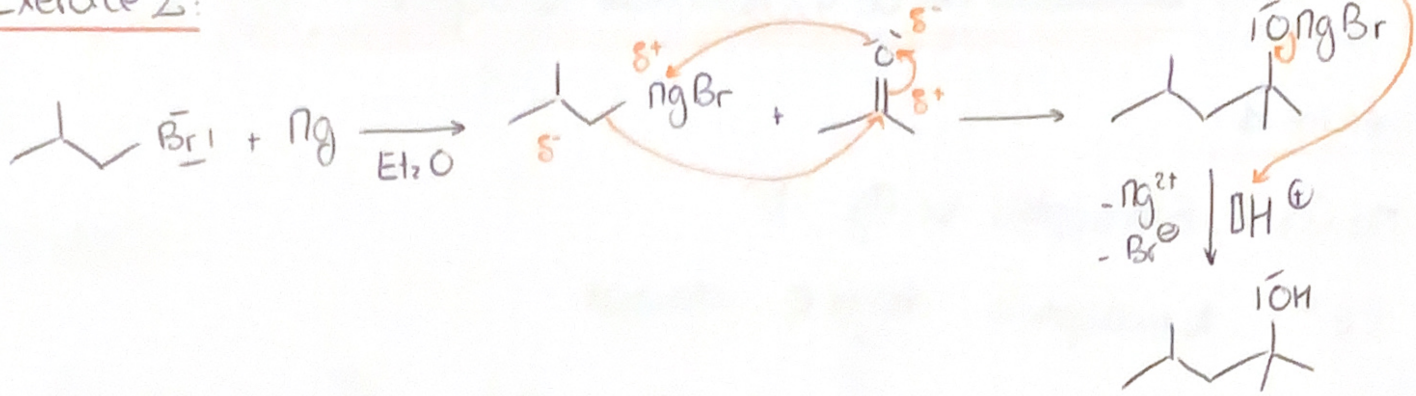
⑤ SO_3 : Electrophile sur S : δ^+
Nucléophile sur O : doublet + $\delta^\ominus$

⑥ $MeMgI$: Electrophile sur Mg : δ^+
Nucléophile sur Me : chargé δ^- : inversion polarité : Umpolung

⑦  :
Electrophile sur C=C
Nucléophile sur C=C

⑧ $PhCH_2^\oplus$: Electrophile sur $C^\oplus$

* Exercice 2 :

1


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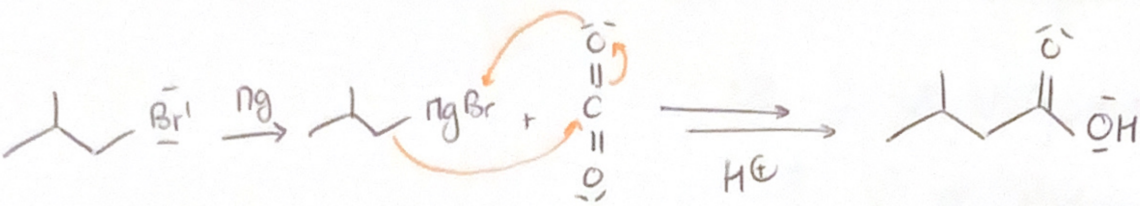

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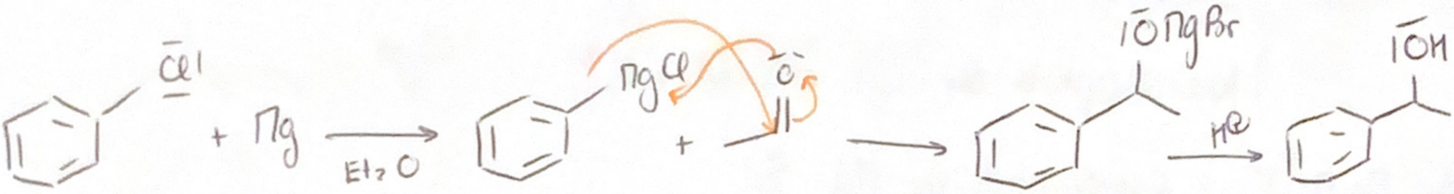

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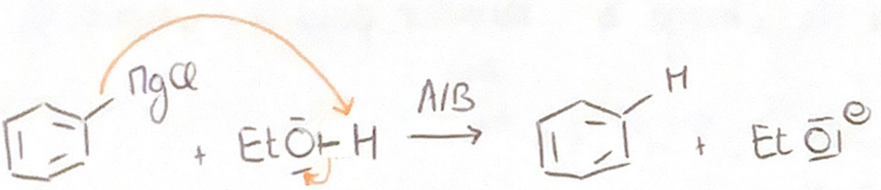
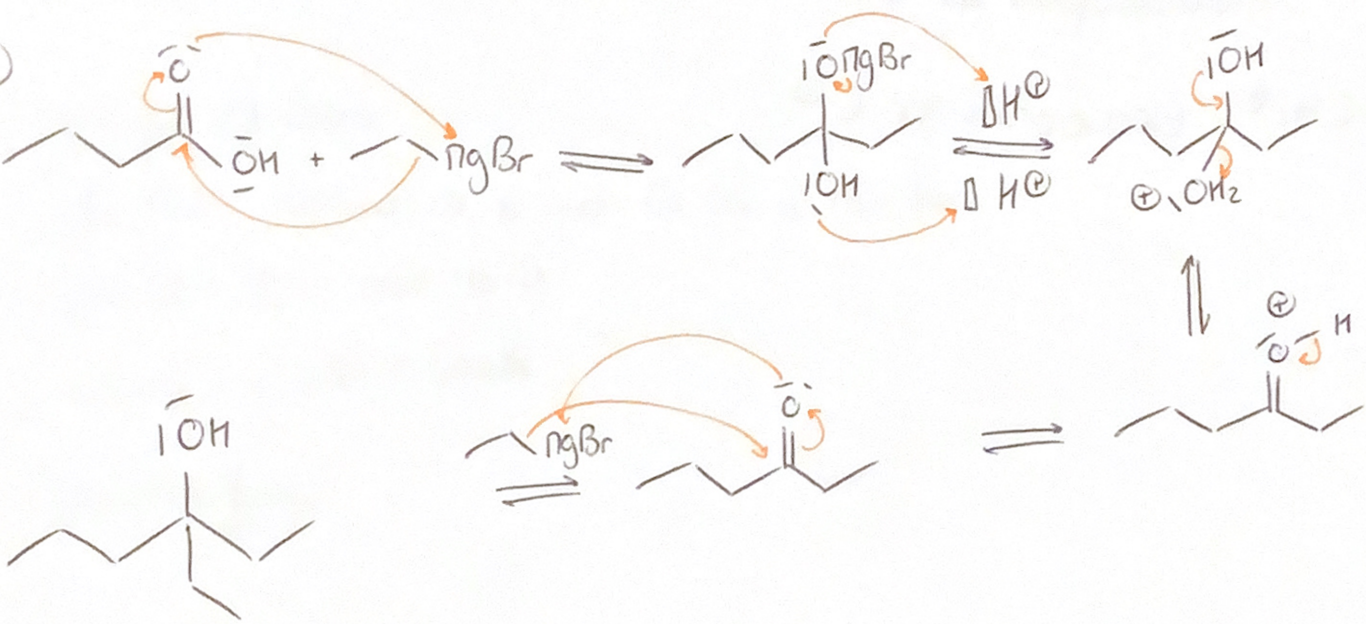


: Destruction RMgX

5


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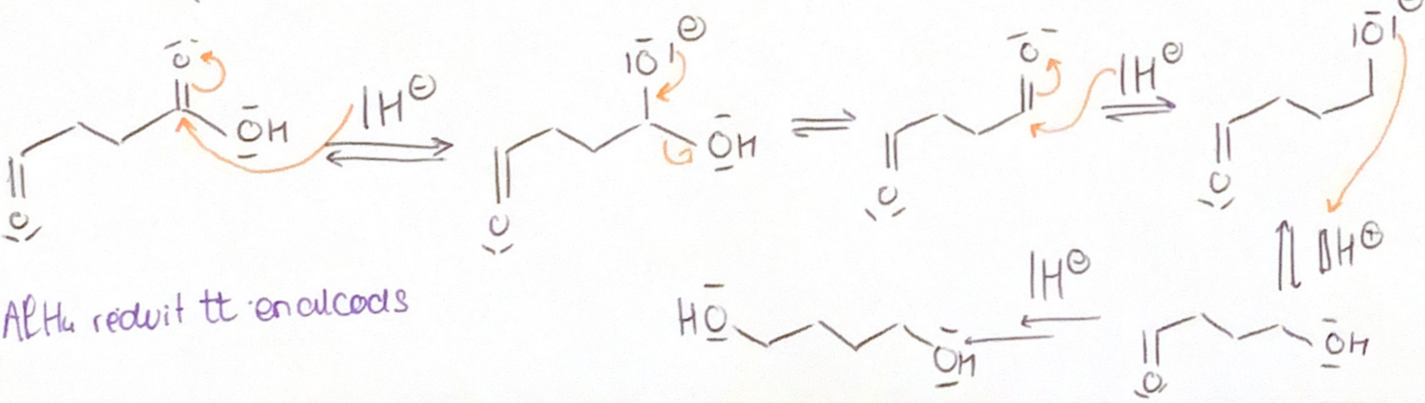
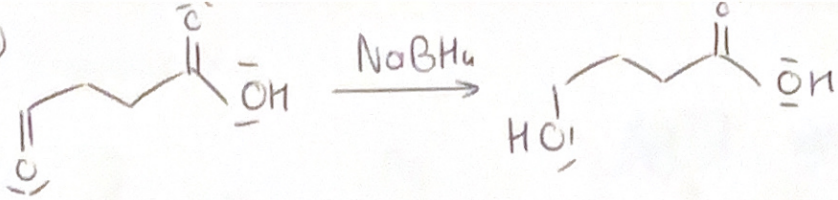


LiAlH₄ reduit tt en alcools

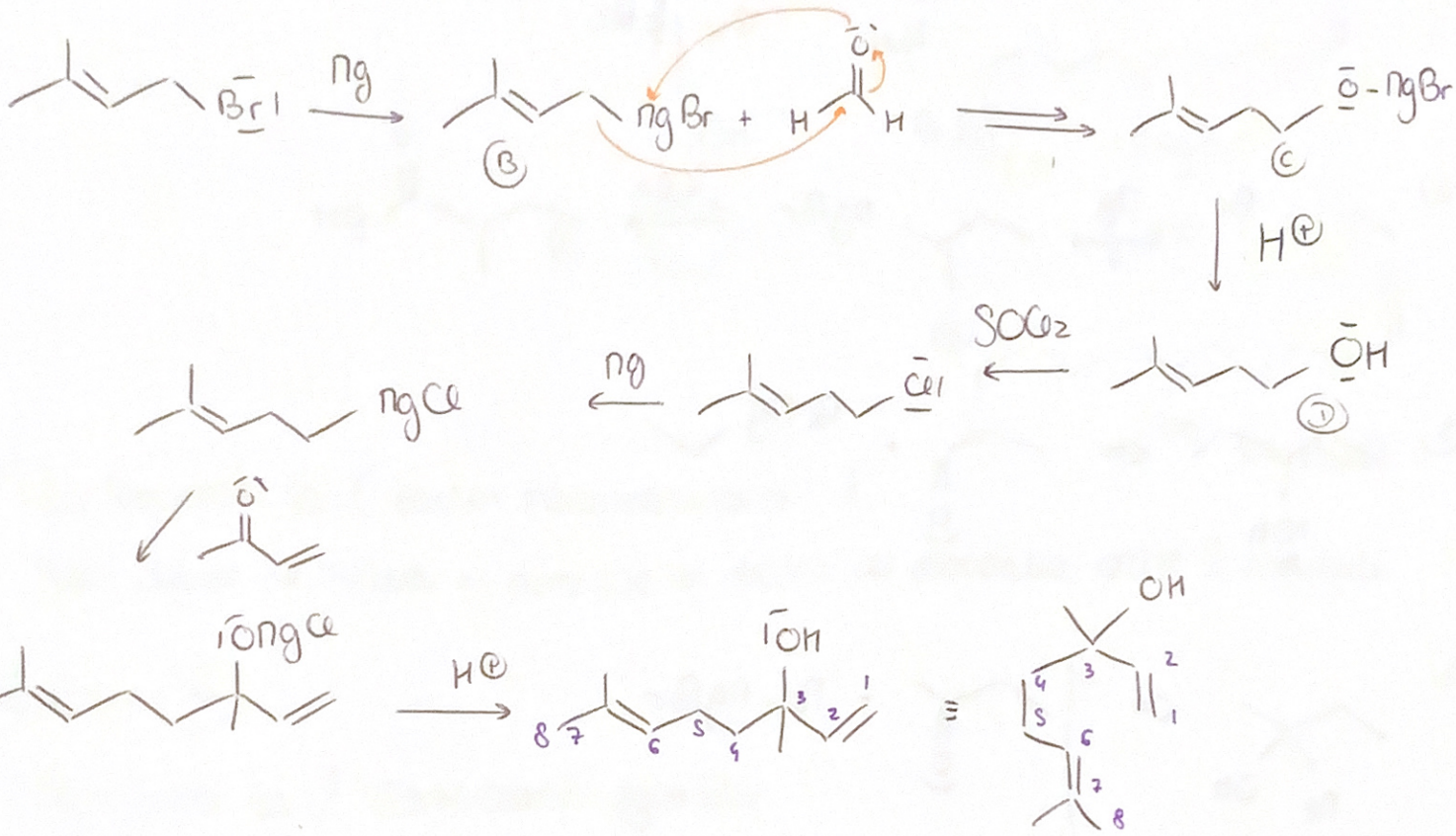
⑦



$NaBH_4$: seulement } cétones / aldéhydes

* Exercice 3 :

①

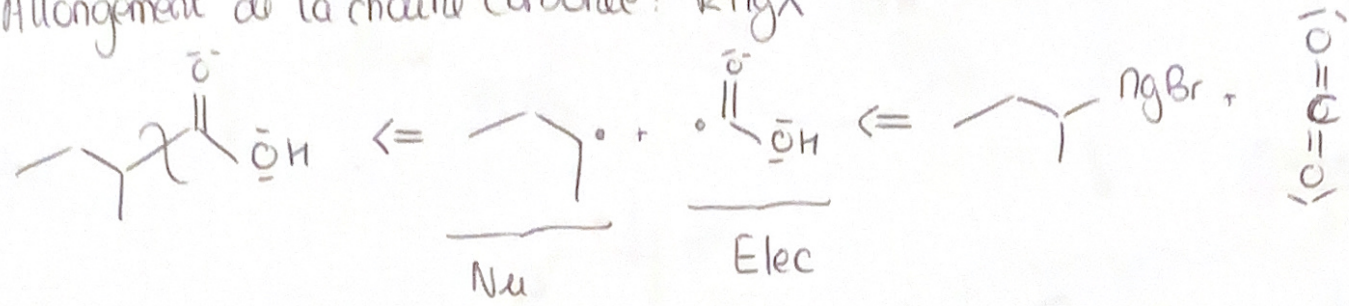


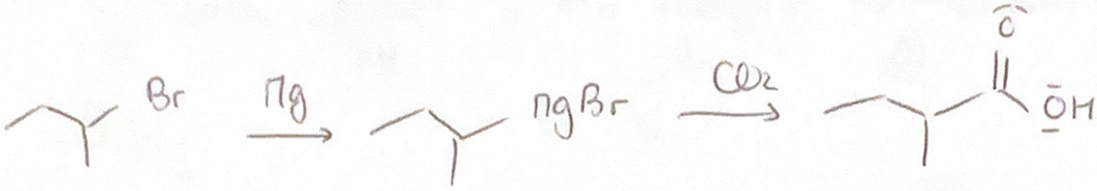
④ Montage : cf cours

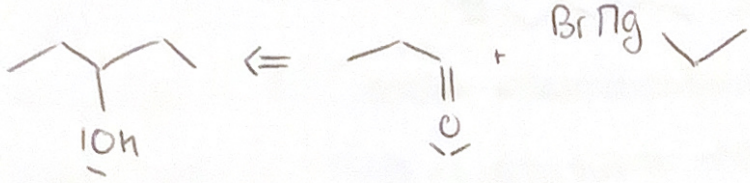
- pas H_2O : anhydrique ⊕ garde $CaCl_2$ ⊕ Atm N_2
- pas CO_2 / O_2 : atm inerte
- Wurtz : goutte à goutte
- pas chauffage

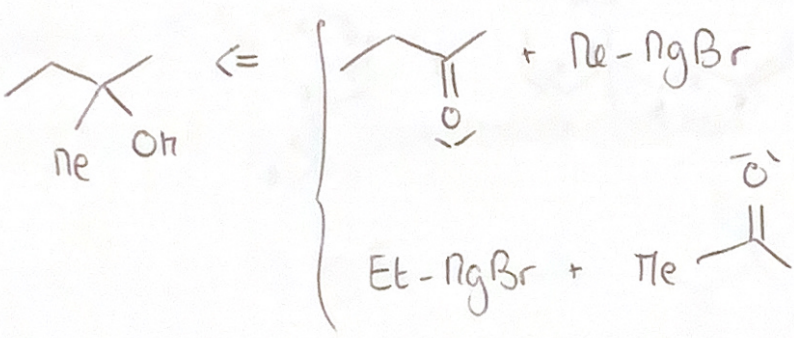
* Exercice 4:

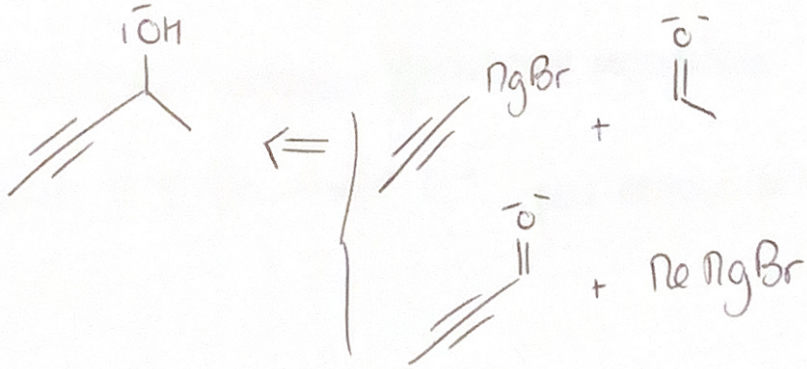
① Allongement de la chaîne carbonée : RMgX

② 

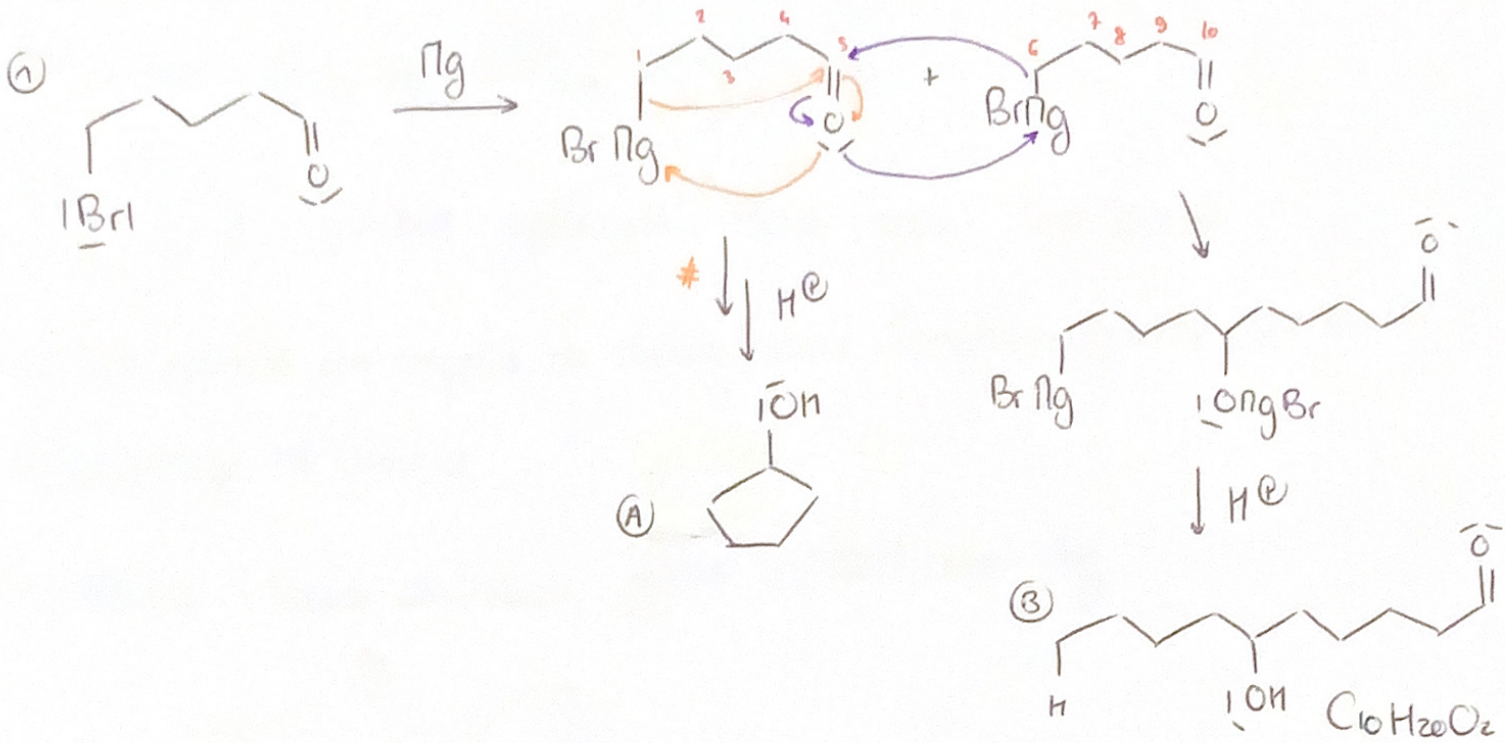
④ 

⑤ 

⑥ 

⑦ 

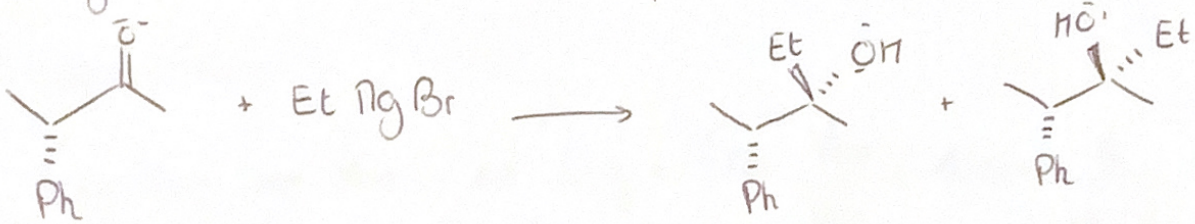
* Exercice 5 :



(A) Pour favoriser (A) (réaction intramoléculaire) il faut diluer le milieu => diminue les chances de rencontres entre 2 molécules

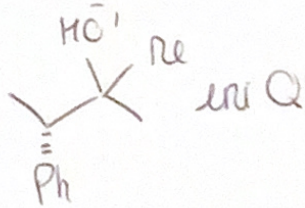
* Exercice 6 :

(A) RMgX donne les 2 stéréoisomères possibles



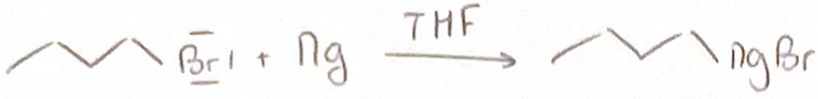
=> Diastéréoisomères : facilement séparables

(2) avec Ne MgBr : 1 seul C* : pas besoin de séparation :



un Q

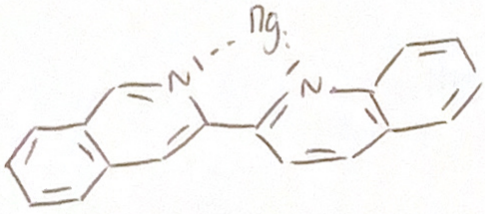
* Exercice 8 :

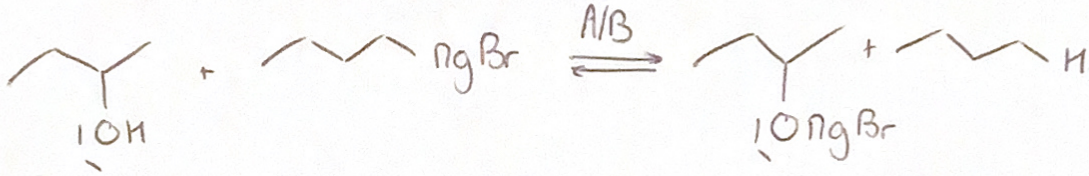
① 

THF :  : polaire, aprotique ; Base Lewis : bon solvant

② On utilise une ampoule de coulee isobare. Goutte à goutte pour eviter le couplage de Wurtz

③ BNQL : Base de Lewis : forme adduit avec Ng



④ Butan-2-ol : 

A l'equivalence :

$$C_{ng} \cdot V_{ng} = C_{OH} \cdot V_{OH} \Leftrightarrow C_{ng} = C_{OH} \cdot \frac{V_{OH}}{V_{ng}} = 1{,}00 \times \frac{V_e}{10{,}0} = \underline{9{,}5\,10^{-1}\ mol/L}$$

⑤ Au debut on introduit :

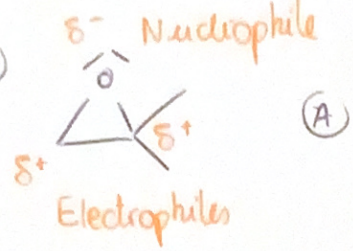
$n(Ng) = m/M = 1{,}65\,10^{-1}\ mol$

$n(RBr) = \frac{m}{M} = \frac{\rho \cdot V}{M} = 1{,}58\,10^{-1}\ mol$ => Limitant

Rendement : $\eta = \frac{n_f}{n_{max}} = \frac{C_{ng} \times V_{tot}}{n(RBr)_0} = 55\%$

⚠ On a pris 10 mL sur 92 mL du depart => $V_{tot} = 92\,mL \neq V_{ng} = 10\,mL$

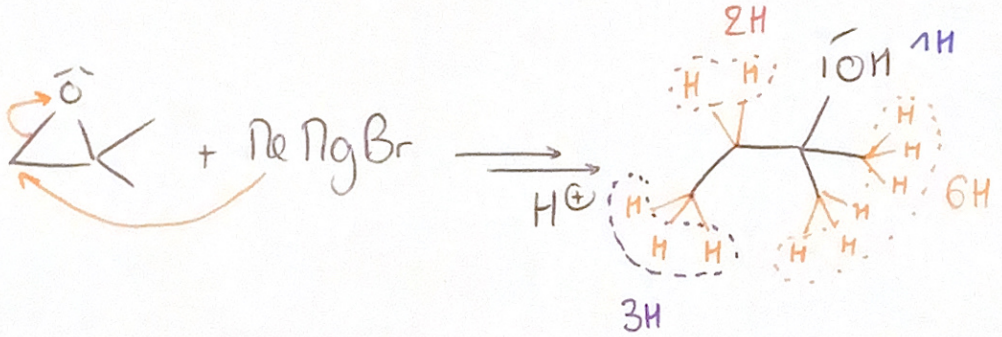
* Exercice 9

① 

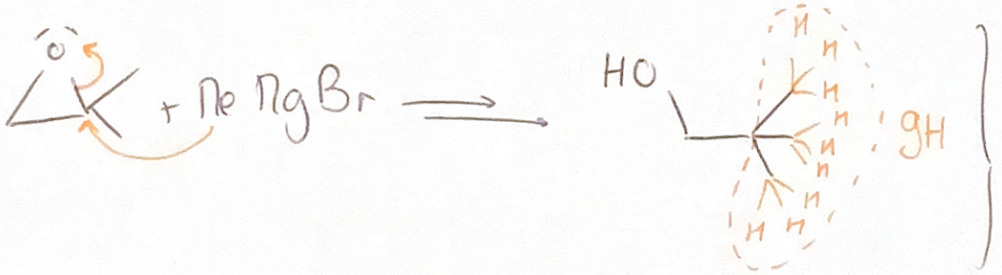
Ⓐ

② A peut subir une Addition nucléophile par $\overset{\delta^-}{Me}-\overset{\delta^+}{MgBr}$

③ Spectre IR { une fonction OH : $\sigma = 3400\ cm^{-1}$
pas — C=O : $\sigma \neq 1600\ cm^{-1}$



} Ça fonctionne



} Ça fonctionne pas

④ Regioselective : attaque sur un site préférentiellement.