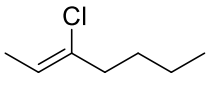
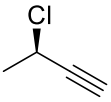
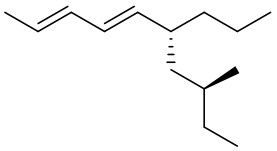
Chimie Générale Avancée II: Partie Organique
Exercices - Séance n°8 – 11 avril 2025-solutions

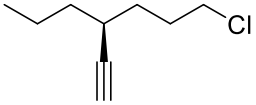
Exercice 1 (13.5 points)

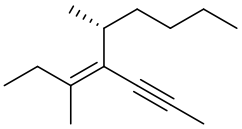
Donner la nomenclature systématique des composés suivants.

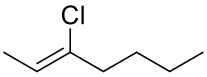


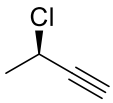






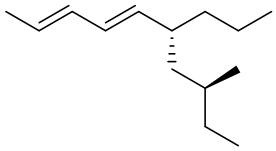




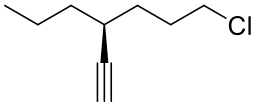


(*Z*)-3-chlorohept-2-ène
(2 points)

(*R*)-3-chlorobut-1-yne
(2 points)

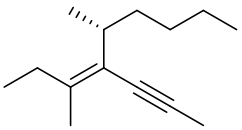


(2*E*,4*E*,6*R*,8*S*)-8-méthyl-6-propyldéca-2,4-diène
(4 points)



(ancienne nomenclature:
(*S*)-6-chloro-3-propylhex-1-yne)

(*S*)-1-chloro-4-ethynylheptane
(2.5 points)



(ancienne nomenclature:
(*R*,*E*)-5-méthyl-4-(1-méthylpentyl)-hept-4-én-2-yne)

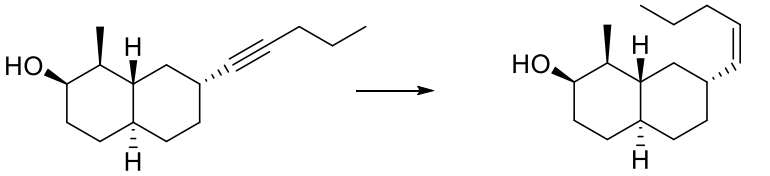
(*R*,*E*)-3,5-diméthyl-4-(prop-1-yn-1-yl)non-3-ène
(3 points)

[barème: 0.5 point pour la chaine principale, 0.5 point pour la numérotation, 0.5 point par substituant, 0.5 point par stéréocentre/géométrie d'oléfines]

Exercice 2 (30 points)

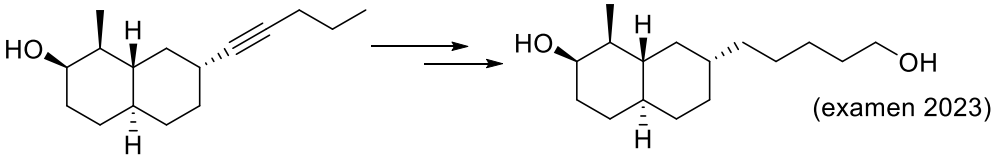
Proposer des conditions pour les transformations suivantes et donner le mécanisme pour chaque transformation. Justifier les sélectivités proposées si nécessaire.

(1)



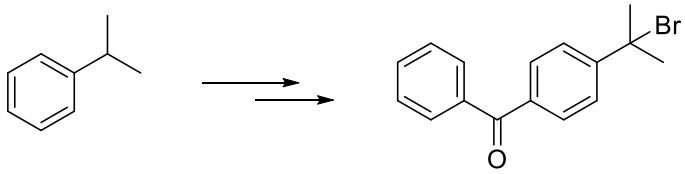
(examen 2023)

(2)



(examen 2023)

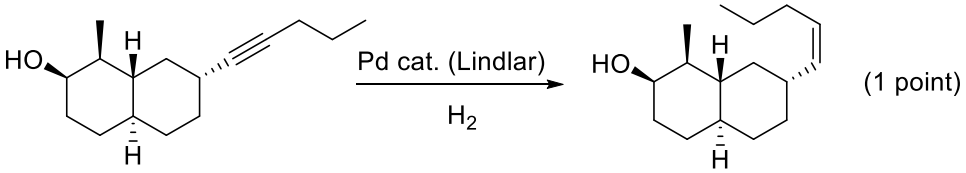
(3)



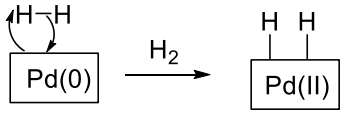
(examen 2020)

Solutions

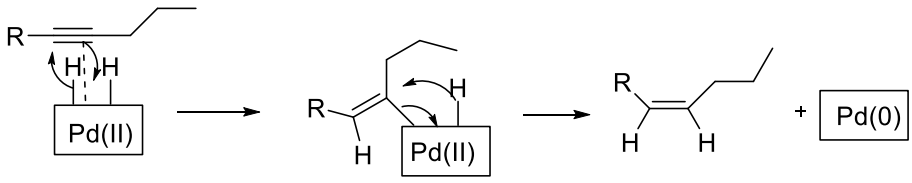
(1)



(1 point)

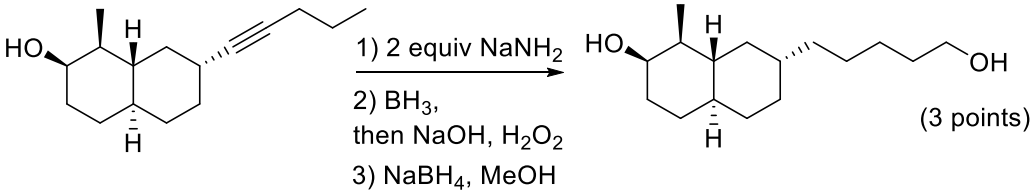


(3 points)

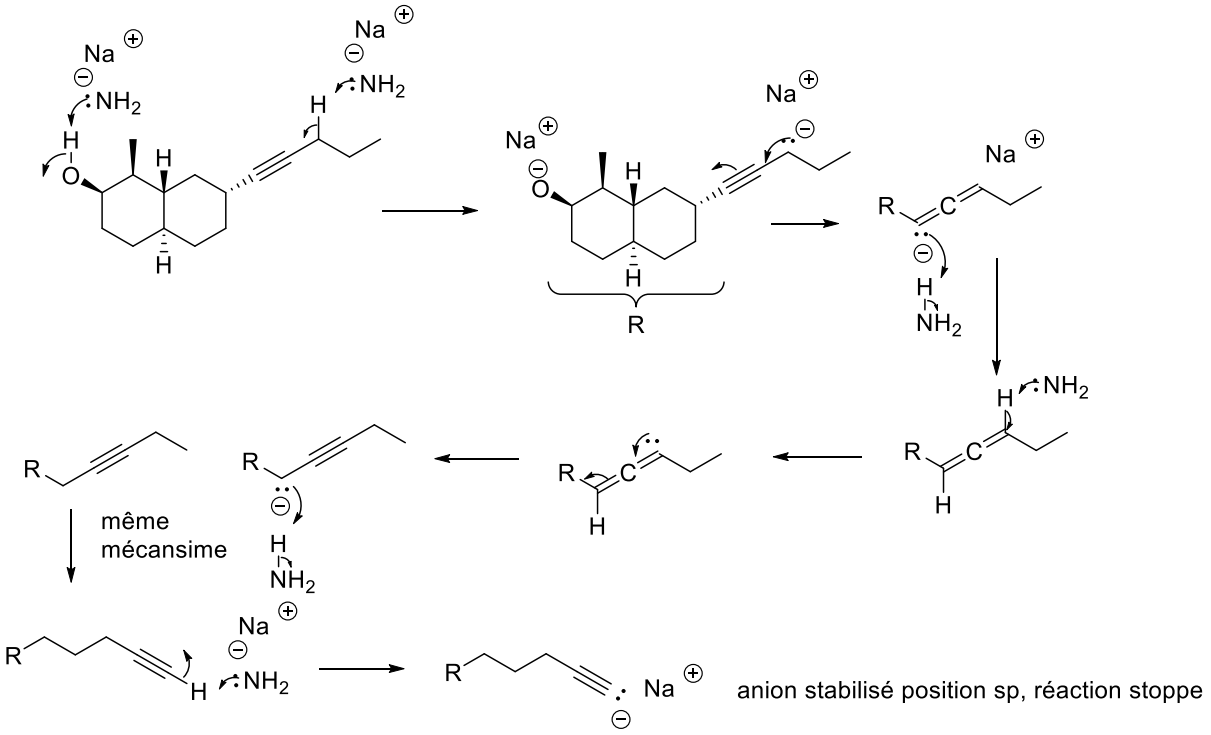


[Barème: 1 point pour la réponse, 3 points pour le mécanisme]

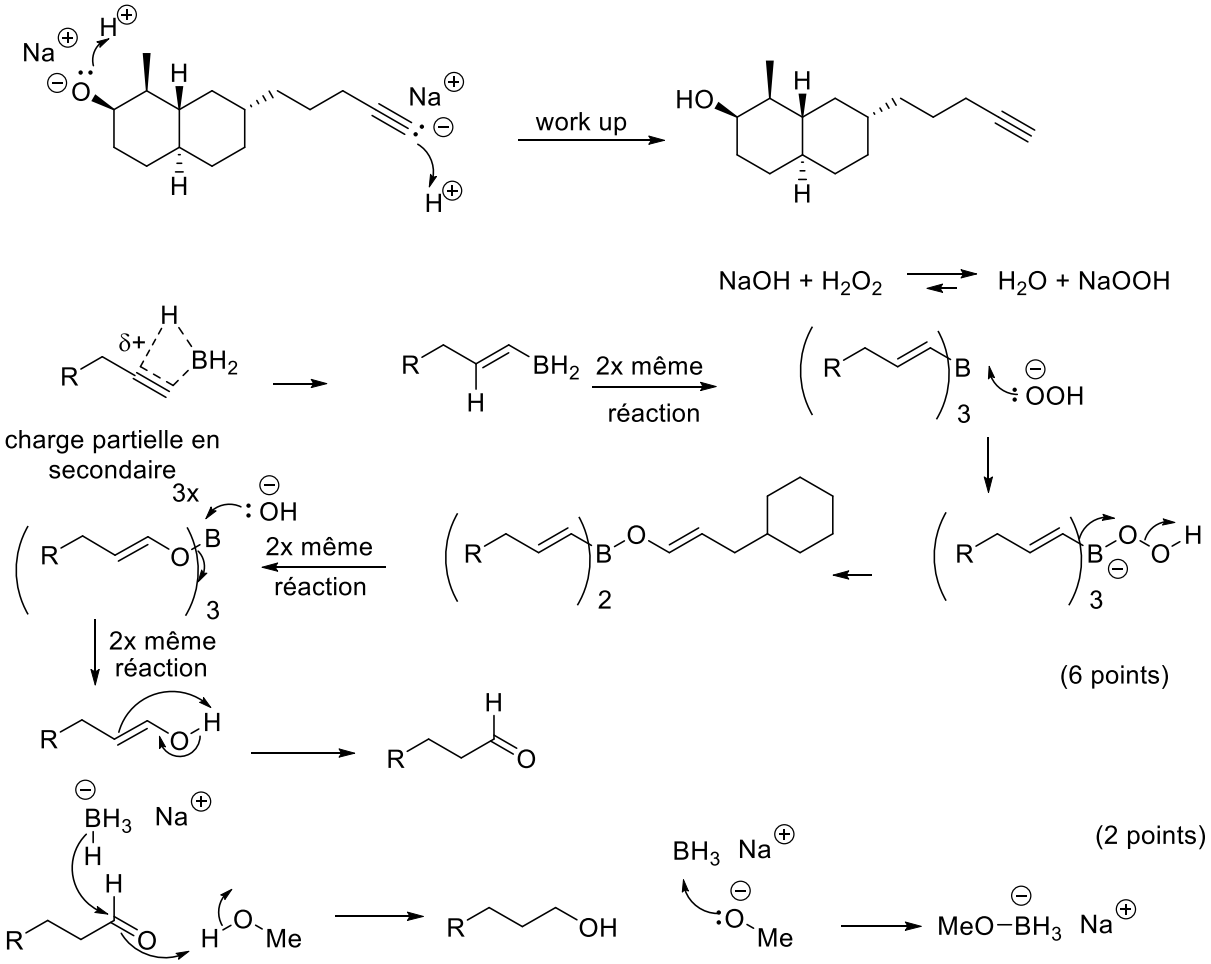
(2)



(3 points)



(5 points)

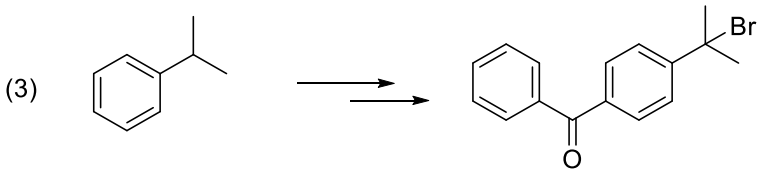


(6 points)

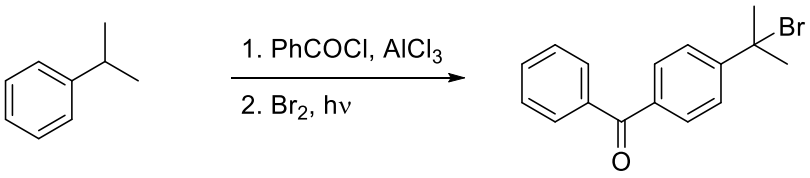
(2 points)

[Barème: 3 points pour la réponse, 13 points pour le mécanisme. Autre réponse acceptée:
1) $NaNH_2$
2) Reduction de la triple liaison en double liaison : Na, NH_3 liq ou Pd Lindlar H_2.

3) BH_3, puis H_2O_2 NaOH.]

(3) 

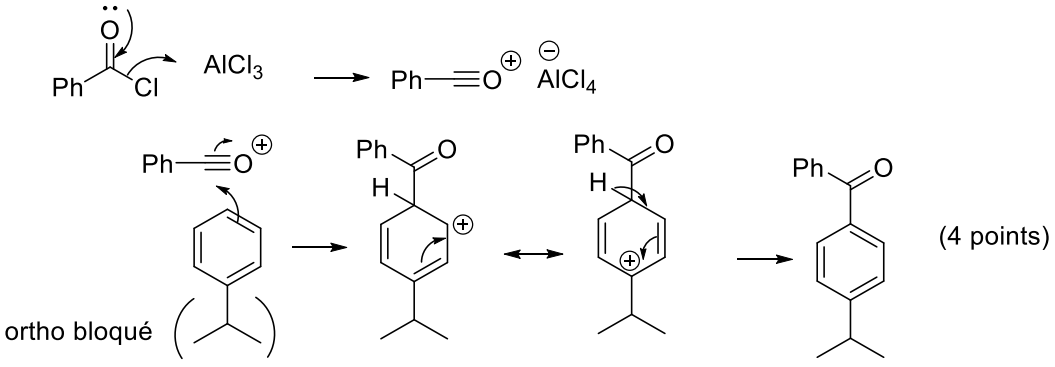
(examen 2020)



(2 points)

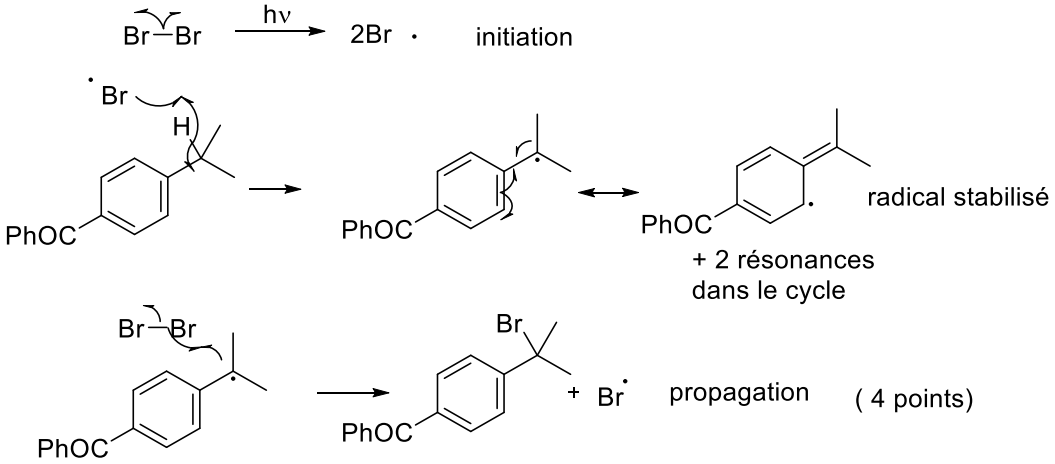
(ordre inverse aussi OK)

1.



(4 points)

2.

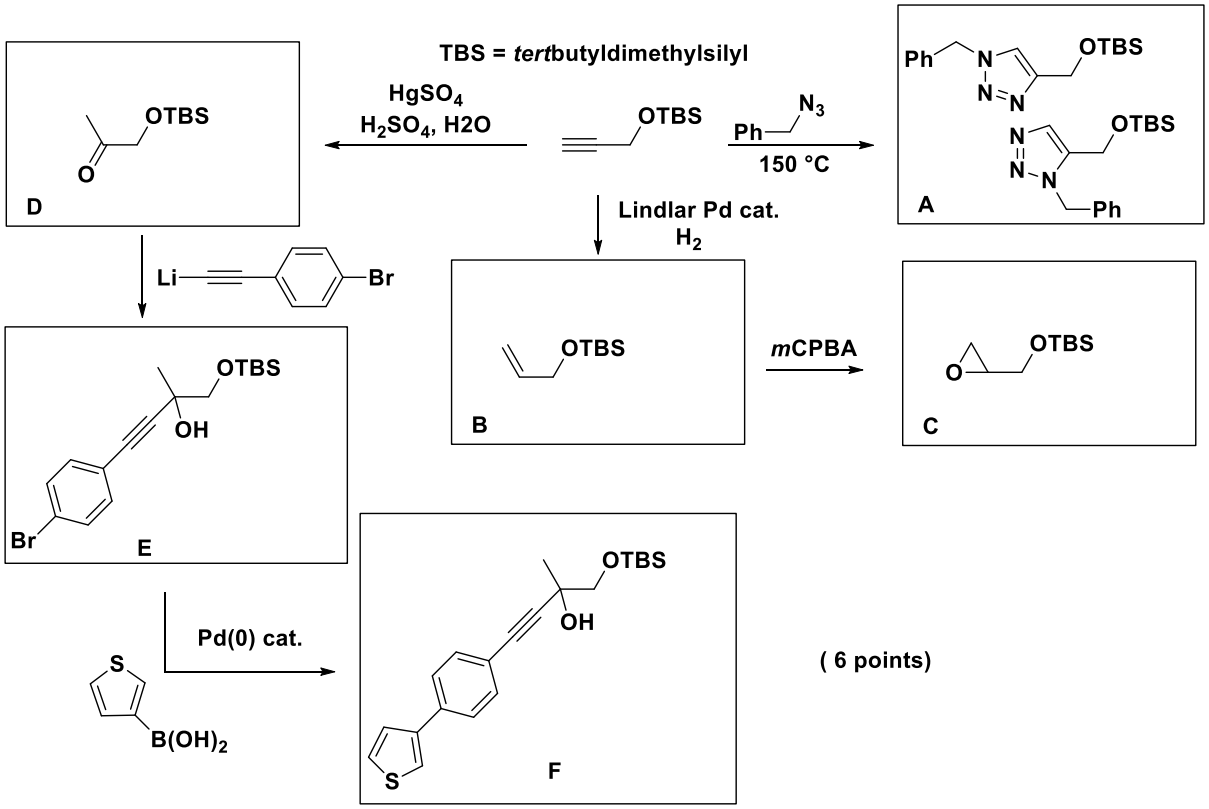


(4 points)

[barème: 2 points pour la réponse, 8 points pour le mécanisme]

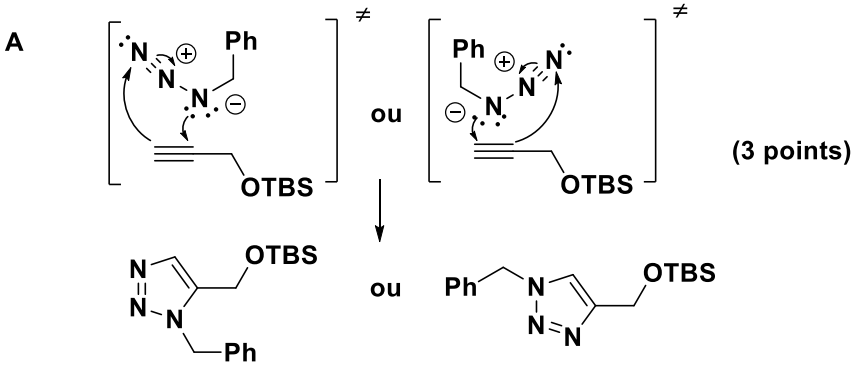
Exercice 3 (24 points)

Indiquer les produits obtenus sous les conditions suivantes et proposer un mécanisme pour les transformations. Justifier les sélectivités observées si nécessaire.

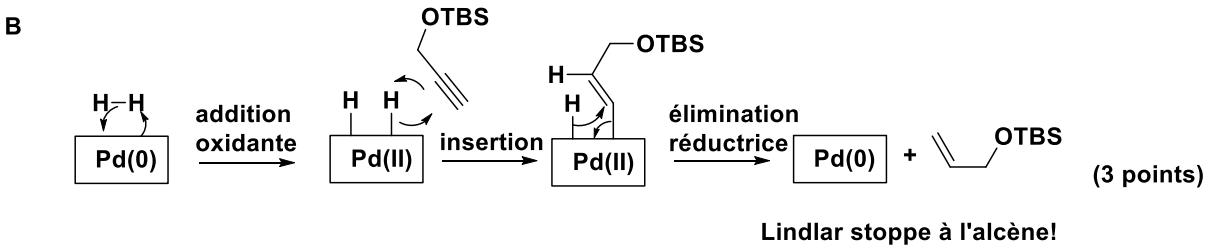


(6 points)

Mécanismes



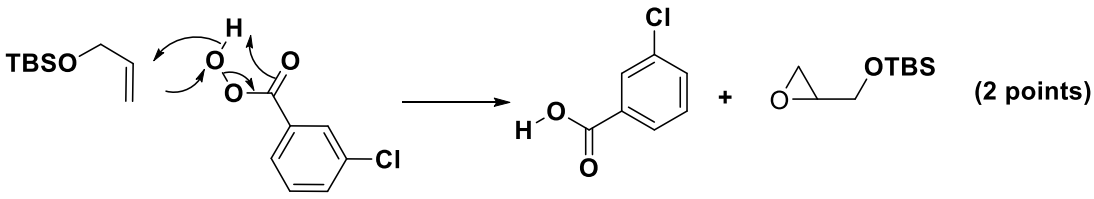
(3 points)



(3 points)

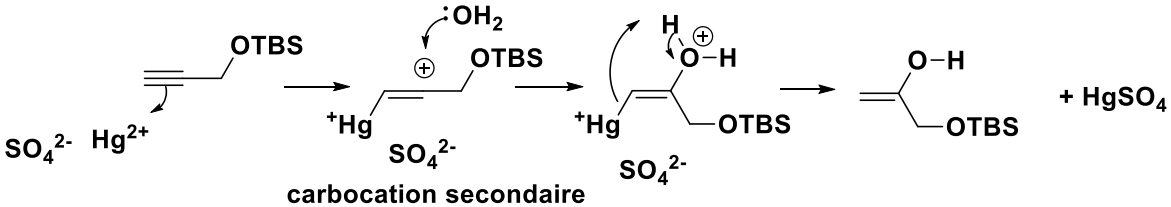
Lindlar stoppe à l'alcène!

C



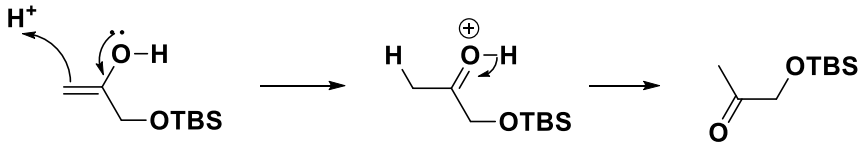
(2 points)

D

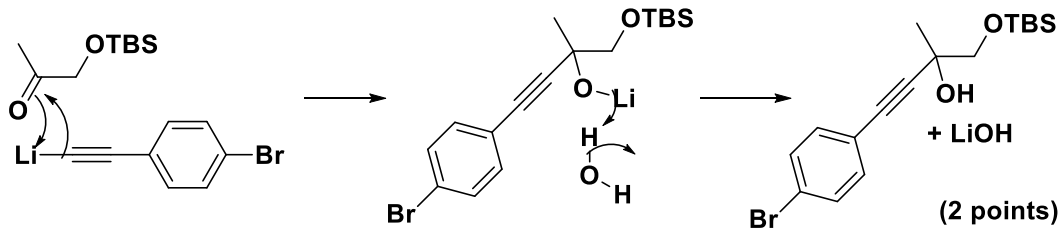


carbocation secondaire mieux stabilisé

(5 points)

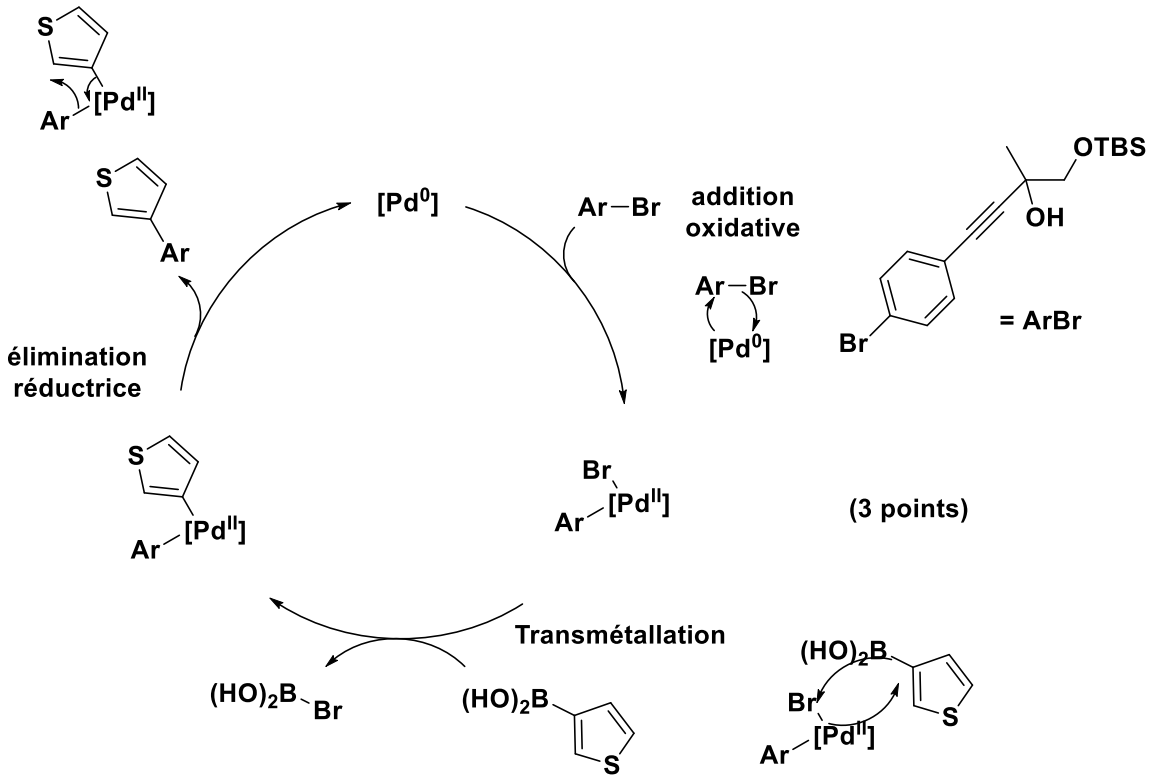


E



(2 points)

F



(3 points)