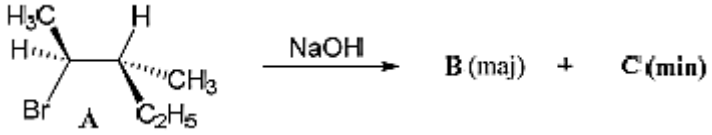
University of Djillali Bounaama Khemis Miliana
Faculty of Matter Sciences and Computer Science
Department of Chemistry

2nd year Chemistry
Organic Chemistry 2

Series N°3

Exercise 1:

Treatment of compound **A** with hot sodium hydroxide leads to the formation of two products: **B** (major) and **C** (minor).



1) Given that the reaction rate follows $\mathbf{V = [A][OH^-]}$, what type of reaction is this?
2) Propose the mechanism accounting for the formation of compounds **B** and **C**, including their configuration.
3) Justify why **B** is the major product.

Exercise 2:

I) The preparation of n-butane can be achieved through several reactions, as outlined below. Provide the structures of compounds **A**, **B**, **C**, **D**, and **E**.

A (Bromo derivative) $\xrightarrow{2\,Na}$ *n*-butane

B (Ketone) $\xrightarrow{Zn/H^{\oplus}}$ *n*-butane

C (Alkene) $\xrightarrow[Pd/C]{H_2}$ *n*-butane

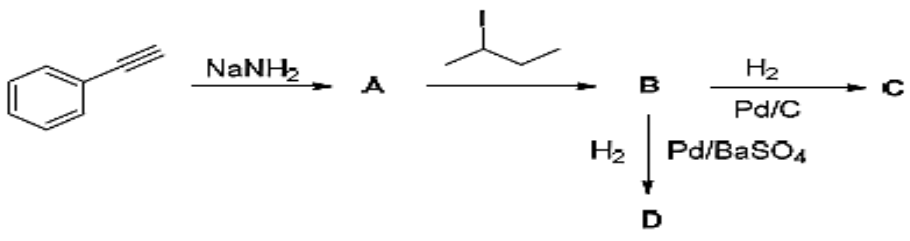
B (Iodo derivative) $\xrightarrow[\text{Anhydrous ether}]{Mg}$ **E** $\xrightarrow{H_2O}$ *n*-butane

II) Upon treatment of 2-bromo-3-methylbutane with sodium ethoxide, three compounds were isolated: two isomeric hydrocarbons **A** and **B** (molecular formula C_5H_{10}) and a third compound **C** ($C_7H_{16}O$).

Determine the structures of **A**, **B**, and **C**, given that **A** was obtained in fourfold greater quantity than **B**.

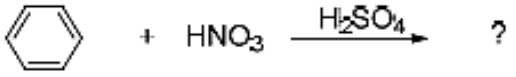
Exercise 3:

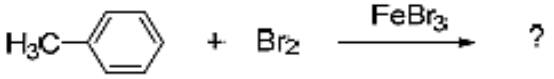
Complete the reactions below by providing the structures of compounds A, B, C, and D.

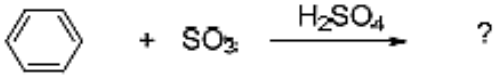


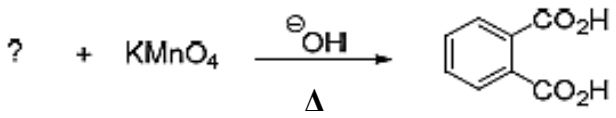
Exercise 4:

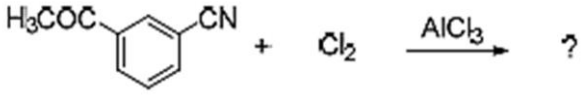
Complete each of the following reactions:

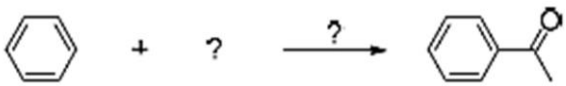
a) 

b) 

c) 

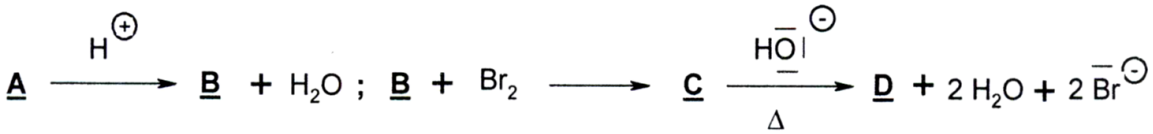
d) 

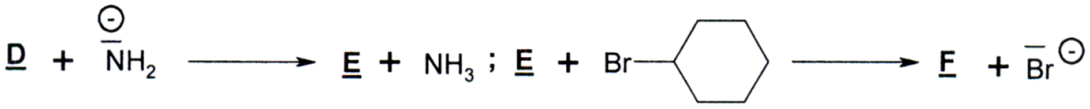
e) 

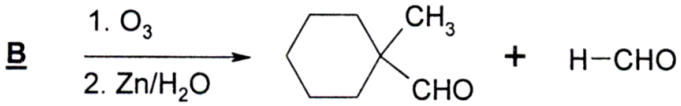
f) 

Exercise 5:

Identify the compounds denoted by letters in the following reaction sequences:







Exercise 6:

Identify the compounds labeled with letters in the following reaction sequences: