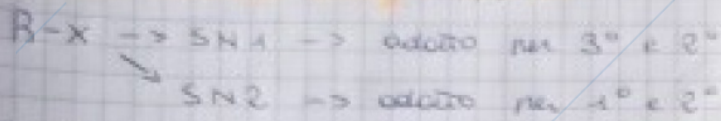


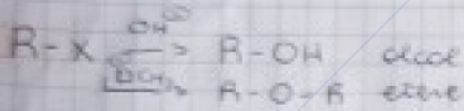
# CHIMICA ORGANICA

17/10/2023

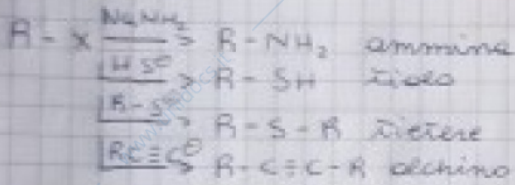


Nella  $S_N2$  la velocità dipende dall'ordine e dal nucleofilo e avviene tutto insieme

Nella  $S_N1$  la velocità dipende dall'ordine e avviene in due fasi

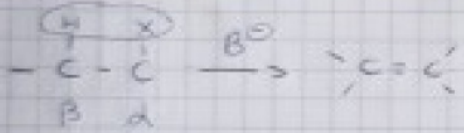


I nucleofili con carica negativamente sono nucleofili forti



Queste reazioni sono tutte  $S_N2$

## REAZIONE DI $\beta$ -ELIMINAZIONE



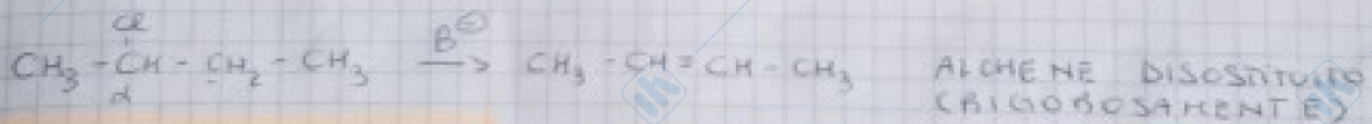
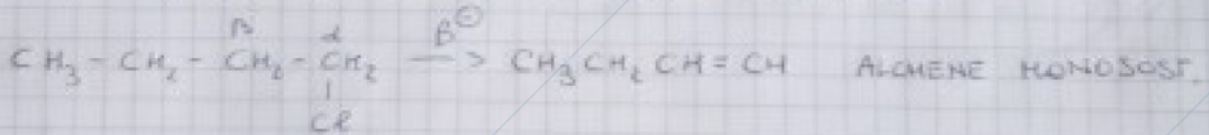
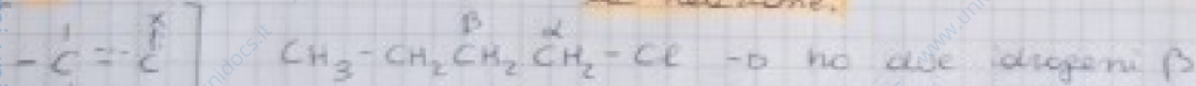
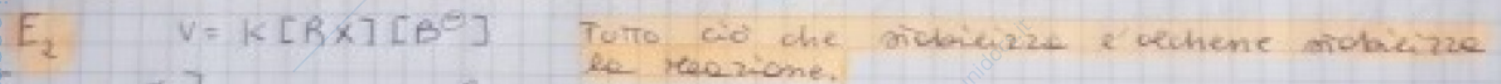
Avviene ad opera di una base generalmente forte

Di solito sono  $OH^-$ ,  $ROH^-$ ,  $NH_2^-$

La base toglie il protone e il doppietto rimasto va a formare il doppio legame.

Questa reazione può avere due meccanismi

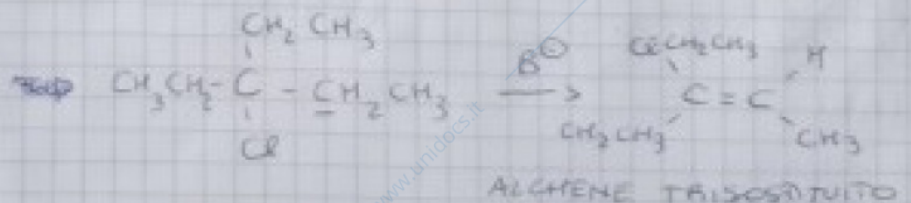
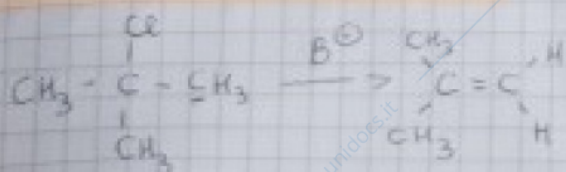
### $\beta$ -ELIMINAZIONE BI-MOLECOLARE



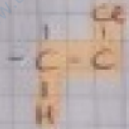
DISOST. > MONOSOST.

Reazione regioselectiva e stereoselettiva

E TRANS > CIS



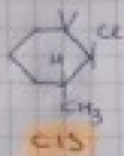
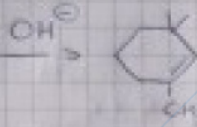
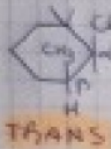
$3^\circ > 2^\circ > 1^\circ$  nel caso della  $E_2$



Sono tutti sulla stessa piana

Tutti possono dare  $E_2$ , i  $3^\circ$  sono i più veloci

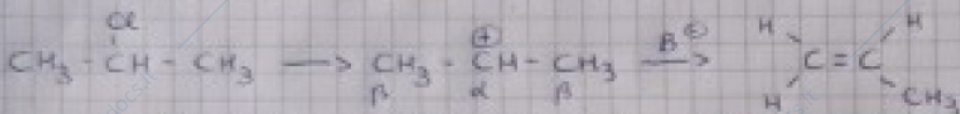
Quando abbiamo un composto ciclico:



In questo caso la  $E_2$  non può avvenire

Quindi è la regola di Zaitsev

### $\beta$ -ELIMINAZIONE MONOMOLECOLARE



$E_1$   $v = [RX]k$   $3^\circ > 2^\circ > 1^\circ$  meno endotermico della  $E_2$

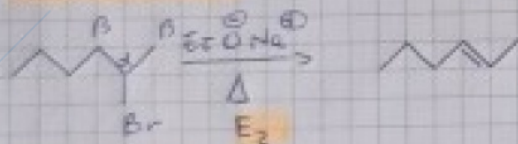
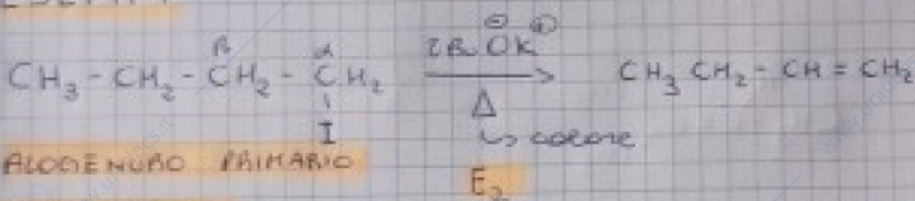
Valle sempre la regola di Zaitsev.

RX	$E_1$	$E_2$
$1^\circ$	X	✓
$2^\circ$	B. deb.	B. forte
$3^\circ$	B. deb.	B. forte

Base debole:  $\text{H}_2\text{O}$  o  $\text{ROH}$

Base forte:  $\text{NaOH}$ ,  $\text{KOH}$ ,  $\text{NaNH}_2$

### ESEMPLI

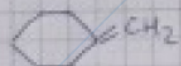


SEGUO LA REGOLA DI ZAITSEV

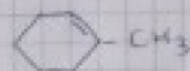
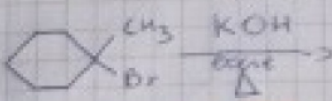
SI FORMA SOLO UN ALCHENE DISOSTITUITO TRANS

ALCHENURO SECONDARIO

BASE FORTE



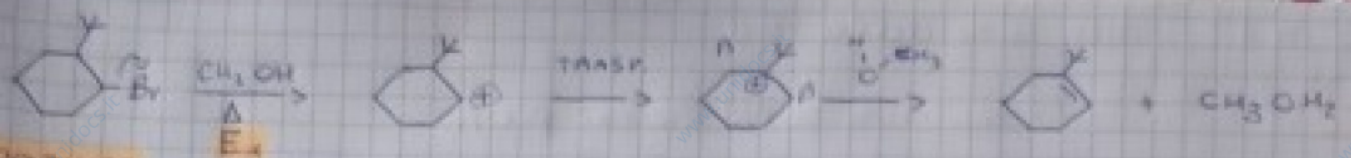
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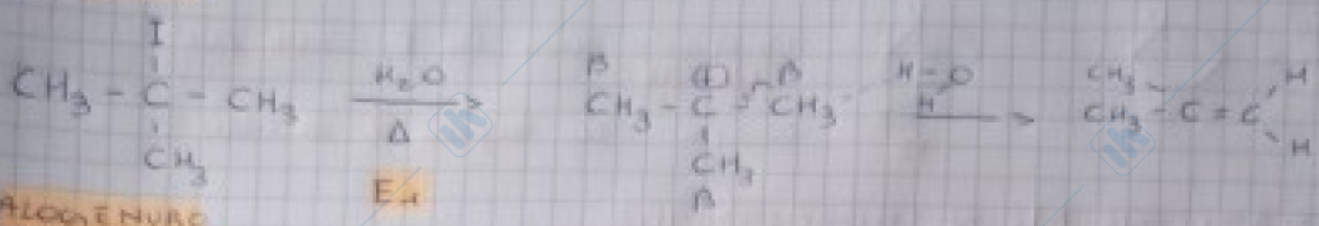
SI FORMA SOLO QUELLO DISOSTITUITO

ALCHENURO TERZIARIO

BASE FORTE



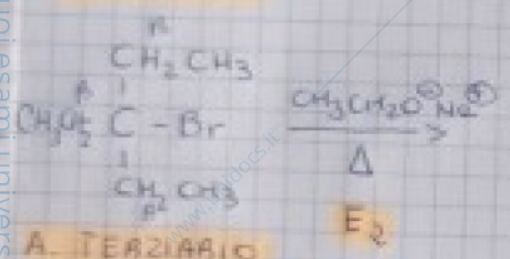
ALCOENURO SECONDARIO  
BASE DEBOLE



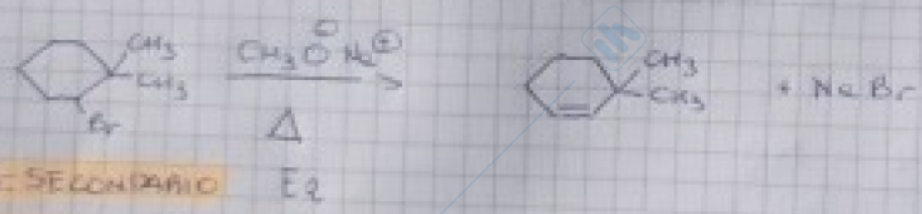
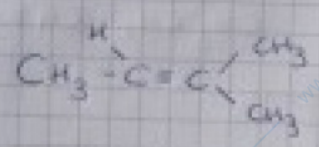
ALCOENURO TERZIARIO  
BASE DEBOLE

RX	SOSTITUZIONE	ELIMINAZIONE
Mecc	$S_N2, NU^{\ominus} / B^{\ominus}$	NO
1°	$S_N2, NU^{\ominus} / B$ deb	$E_1, E_2$ con B forti 2°/3° debole
2°	$S_N2, NU^{\ominus}$ forte, $CH^{\oplus} HC^{\oplus} C^{\oplus}$	$E_2 / OH^{\ominus}, E_1 / AOH$
3°	$S_N1, Nu$ deboli	$E_1$ basi deboli, $E_2$ basi forti

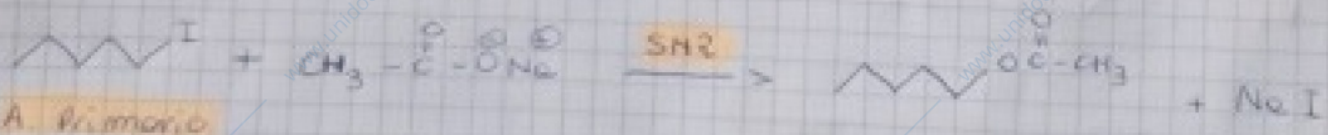
ESEMPLI



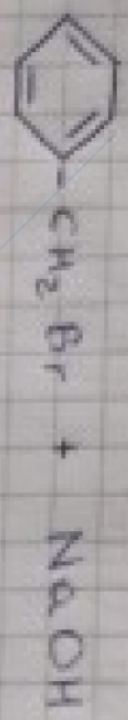
A. TERZIARIO  
Base e nucleofilo forte



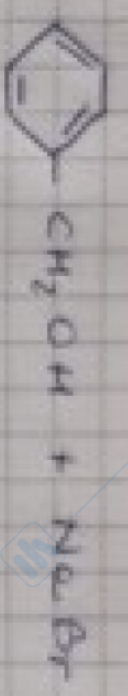
A. SECONDARIO  
BASE E NUCLEOFILO FORTE



A. PRIMARIO  
Nucleofilo forte

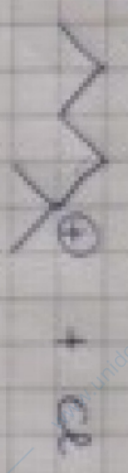


$\xrightarrow{\text{SN2}} \text{ClERE}$

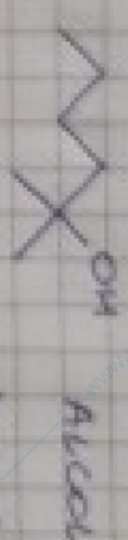


A. PRIMARIO

NU FORTE

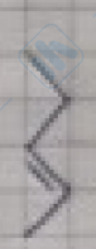
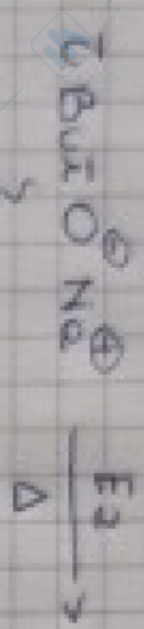
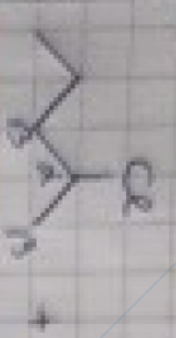


$\xrightarrow[\text{H}_2\text{O}]{\text{H}_2\text{O}}$



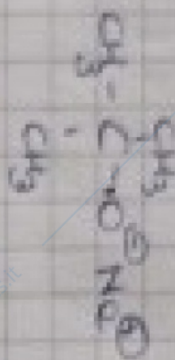
MISCELLA

A. TERZIARIO  
B/NU DEBOLE



A. SECONDRIO

B/NU FORTE



la più dea  
BASE  
CAUSA DELL'INGOMBRO STERICO

INGOMBRO STERICO