

Substitution vs. Elimination (7.9)

Summarize what you know about each of the following mechanisms. (circle all that apply)

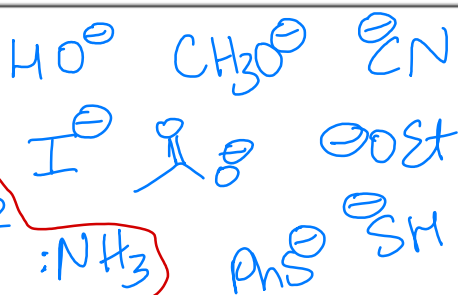
	S_N2	S_N1	E2	E1
bi/unimolecular?	bi uni	bi uni	bi uni	bi uni
one-step mech.?	yes no	yes no	yes no	yes no
need good LG?	yes no	yes no	yes no	yes no
need strong Nu:?	yes no	yes no	yes no	yes no
need strong base?	yes no	yes no	yes no	yes no
sterics important?	yes no	yes no	yes no	yes no
preferred LG type?	1° 2° 3° allylic	1° 2° 3° allylic	1° 2° 3° allylic	1° 2° 3° allylic
stereochemistry?	inversion	racemization	anti LG	mixed stereochem.
other notes	polar aprotic solvent	* solvolysis * protic solvent H ₂ O, ROH	only if + BuOK Zait/Hof.	E + Z Zaitsev

Categorize the following species as a strong or weak nucleophile, AND as a strong or weak base.

NaOH	NH ₃	MeOH	NaCN	iPrOH	NaOEt	NaNH ₂	PhNH ₂	
I ⁻	tBuOK	NaSH	Ph ₃ P	H ₂ O	CH ₃ O ⁻	PhS ⁻	CH ₃ CH ₂ OH	acetate

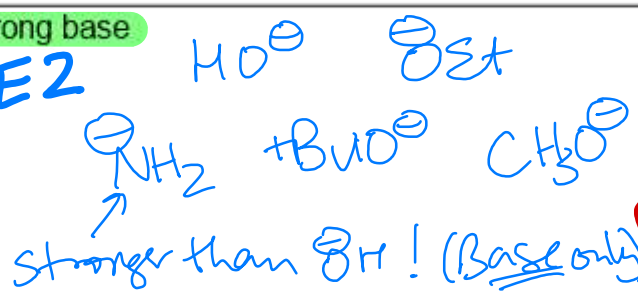
strong Nu:

S_N2



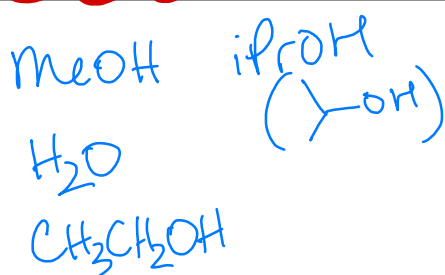
strong base

E2



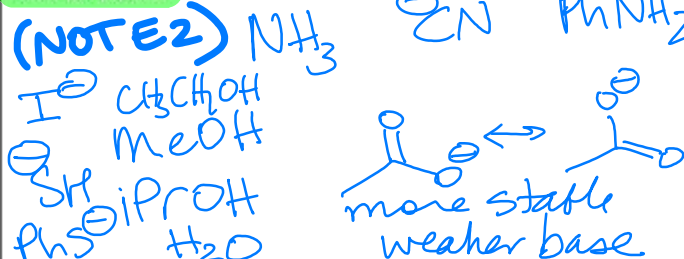
weak Nu:

S_N1



weak base

(NOTE E2)



bigger than R₃N⁺, so a great Nu:!

Note: these are the only neutral ones!

ATTACK!

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For each reaction, determine the mechanism and predict the major product(s). N.R. if no reaction.

