CHE 240

UNIT III SKILLS

CHAPTER	SKILL	
7	E2 RXN/MECH	(2)
8	E.A. RXNS	(4)
9	SN2 RXN	(1)
	"POISON" CATALYST HYDROGENATIONS	(2)
	SYNTHESIS	(1)
		10

CHAPTER SEVEN/EIGHT

ALKENES

- NOMENCLATURE (E/Z)
- STABILITY
- E2 SYNTHESIS
  ZAITSEV VS. HOFFMAN

ADDITION RXNS

MARKOVNIKOV

ANTI- "

SYN VS. ANTI

ELECTROPHILIC ADDITION REACTIONS OF ALKENES

UNSYMMETRIC H–X

X = Br, Cl, OH

MARKOVNIKOV

CARBOCATION REARRANGEMENTS POSSIBLE

ANTI-MARKOVNIKOV

PEROXIDE CATALYST

SYMMETRIC X–X ≡ X_2

X–X = H_2, Br_2, Cl_2, OH–OH

SYN ADD.

H_2

OH–OH

ANTI ADD

Br_2

Cl_2

CHAPTER 8 RXNS OF ALKENES

NAME	REAGENTS	PRODUCT
ACID CATALYZED HYDRATION (EXPT 3)	H_2O / H^+	MARKOVNIKOV ALCOHOL REARRANGEMENTS POSSIBLE
OXYMERCURATION-DEMERCURATION	$Hg(OAc)_2$ $NaBH_4$	MARKOVNIKOV ALCOHOL NO REARRANGEMENT
HYDROBORATION - OXIDATION	$BH_3 \cdot THF$ H_2O_2, OH^-	ANTI MARKOVNIKOV ALCOHOL

CHAPTER NINE
ALYNES

1- NOMENCLATURE
- IUPAC AND ACETYLENE

2- STOICHIOMETRY OF ADD. RXNS.

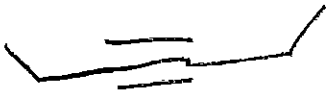
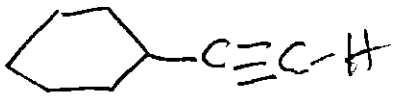
3- ACIDITY OF TERMINAL ALKYNES
- ACETYLIDES IN SN2 RXNS

4- HYDROGENATION RXNS
- POISONED CATALYSTS

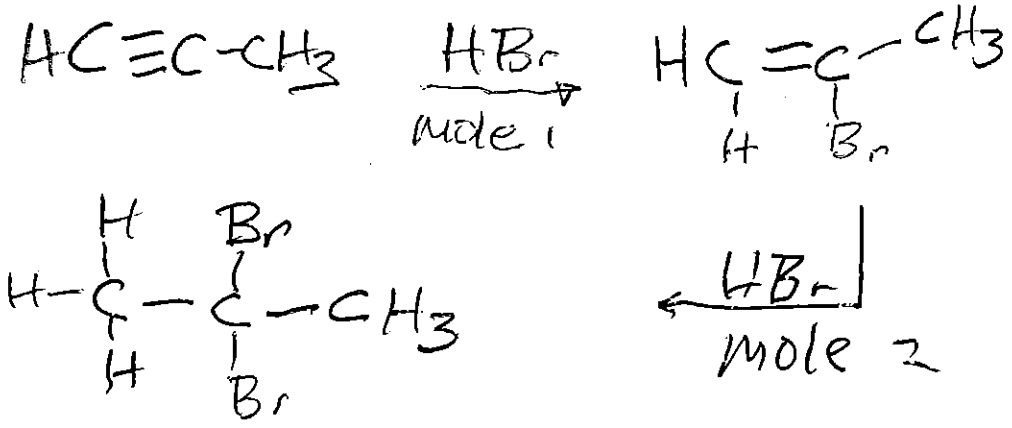
5- KETO-ENOL TAUTOMERISM

6- SYNTHESIS STRATEGY

NOMENCLATURE

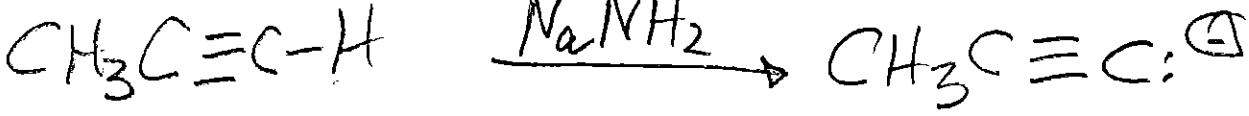
	IUPAC	COMMON
H-C≡C-H	ETHYNE	ACETYLENE
	3-HEXYNE	DIETHYL ACETYLENE
	CYCLOHEXYL ETHYNE	CYCLOHEXYL ACETYLENE

ADDITION REACTIONS



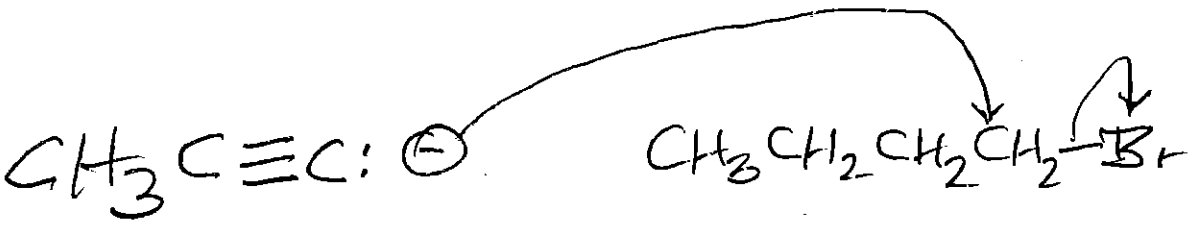
[2 moles $\xrightarrow[\text{PEROXIDES}]{HBr}$ 1,1 DIBROMO PLUS 1,2]

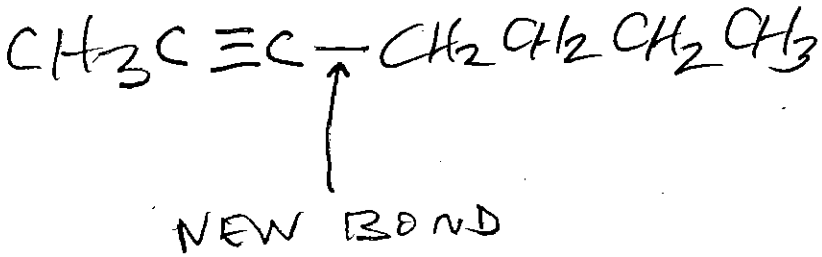
ACIDITY OF TERMINAL ALKYNES



"ACETYLIDE"

CAN BE USED TO MAKE NEW C–C BOND IN S_N2 RXN



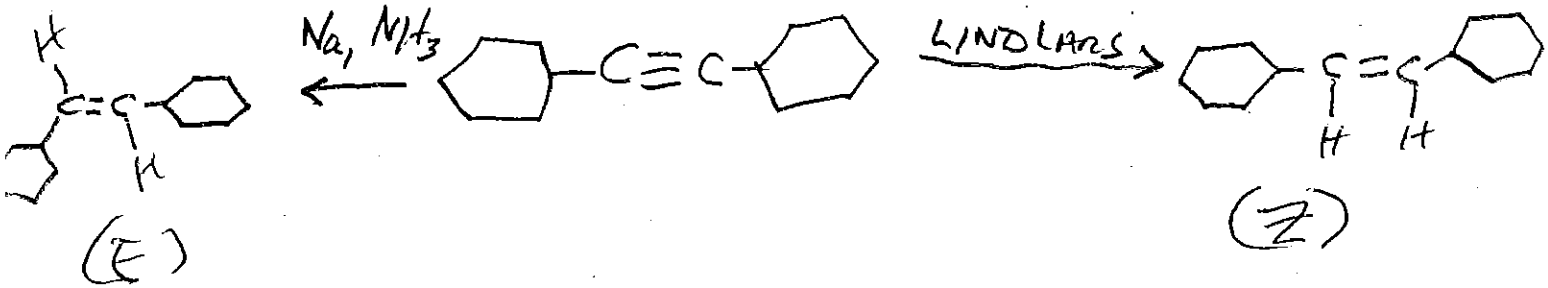


13-15 17, 20, 21, 24

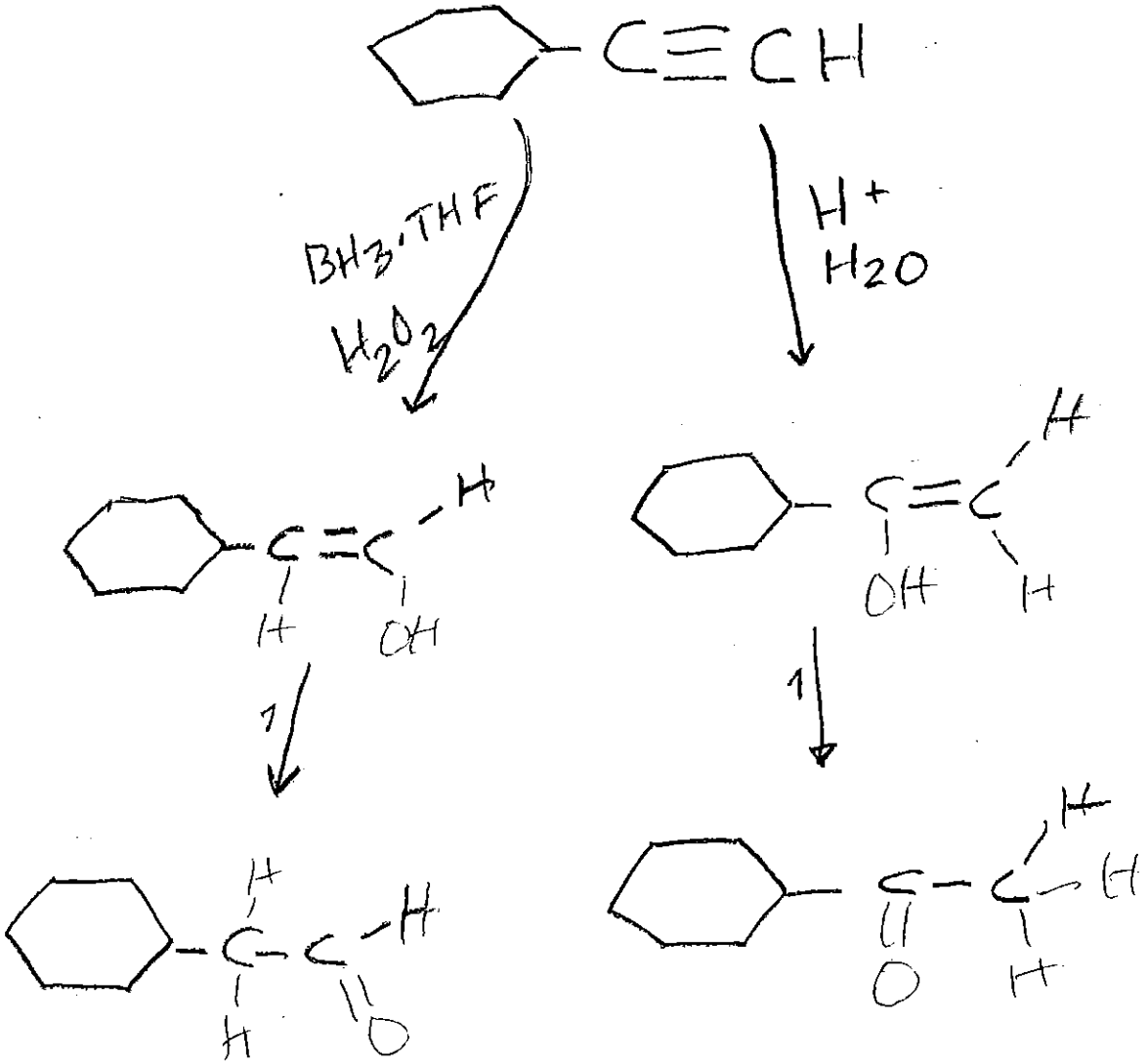
HYDROGENATION OF ALKYNES

DIFFICULT TO CONTROL WITH STOICHIOMETRY HYDROGENATION TO ALKANE IS LIKELY

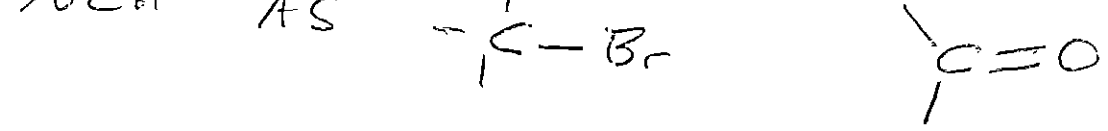
CAN MAXIMIZE YIELD OF ALKENE BY USING "POISONED" CATALYST



ENOLS ARE NOT STABLE AND TAUTOMERIZE TO EITHER ALDEHYDES OR KETONES



HOW ARE ALKYNE RXNS DIFFERENT THAN ALKENE RXNS?

1. TERMINAL ALKYNES CAN FORM ACETYLIDES WHICH CAN BE NUCLEOPHILES AND BOND TO ELECTROPHILIC CARBONS SUCH AS 

2. UNLESS YOU USE A "POISONED" CATALYST HYDROGENATION OF AN ALKYNE DOES NOT STOP AT ALKENE BUT MAKES AN ALKANE

POISONED CATALYSTS TO KNOW!

LINDLARS → CIS ALKENE
($Pd/BaSO_4$)

Na, NH_3 (l) → TRANS ALKENE

3. ENOLS ARE FORMED NOT ALCOHOLS

1° ENOLS MAKE ALDEHYDES

2° ENOLS MAKE KETONES