- NAME ALKANES (1)
- DRAW CONFORMATION (2)
- STRUCTURE-PROP (1)
- DRAW LEWIS (2)
- HYBRID/GEOM (2)
- F.C. (1)
- DRAW RESONANCE FORMS (1)

CHE 240
UNIT ONE

1- REVIEW CARBON HYBRIDIZATION

2- NOMENCLATURE

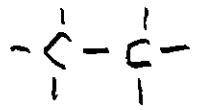
3- STRUCTURE - PROPERTY RELATIONS

4- REPRESENTING COMPOUNDS (OXYGEN CONTAINING)

5- LEWIS STRUCTURES - RESONANCE

CARBON HYBRIDIZATION

SP^3



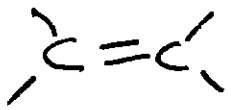
(4) SP^3

109.5°

TETRAHEDRAL

ALKANE

SP^2



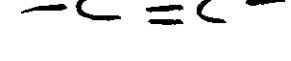
(3) SP^2
(1) P

120°

TRIGONAL PLANAR

ALKENE

SP



(2) SP
(2) P

180°

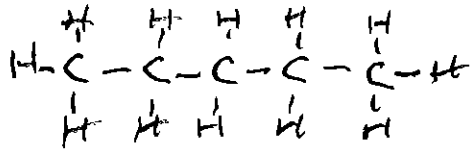
LINEAR

ALKYNE

NOMENCLATURE

EXAMPLE; PENTANE (5 CARBON ALKANE)

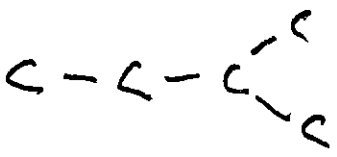
C_5H_{12} C_nH_{2n+2}

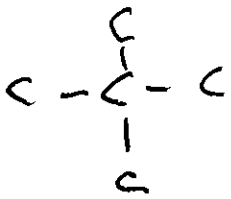


$CH_3(CH_2)_3CH_3$

ISOMERS OF C_5H_{12}

NAMES ?



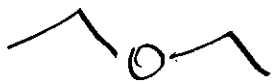


STRUCTURE – PROPERTY RELATIONSHIPS

A) MASS

	BP [°C]
HEXANE	69
OCTANE	126

B) FORCES

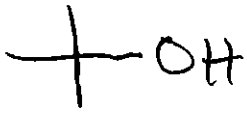


35 °C

118 °C

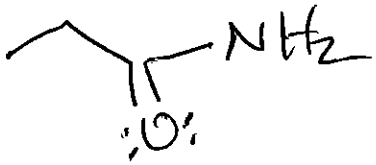
C) SHAPE

118 °C

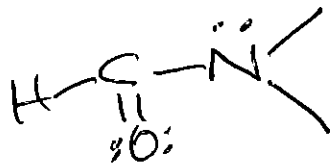


82 °C

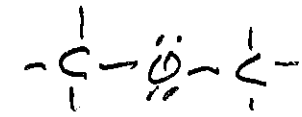
DMF EXAMPLE

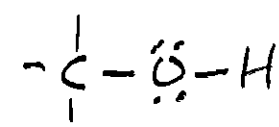


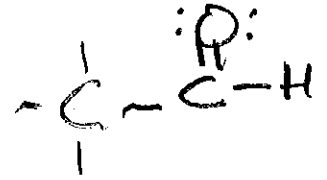
VS

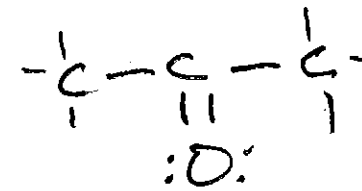


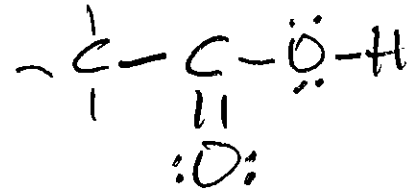
OXYGEN CONTAINING HYDROCARBONS

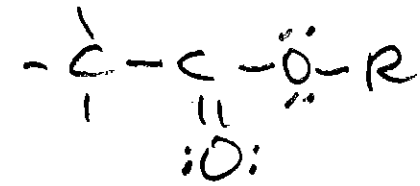
ETHER  ROR

ALCOHOL  ROH

ALDEHYDE  RCHO

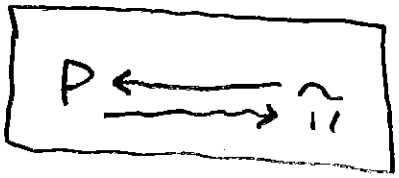
KETONE  RC(O)R

ACID  RCO_2H or RCOOH

ESTER  RCO_2R or RCOOR

RESONANCE AND FORMAL CHARGE

RECALL: RESONANCE IS MOVING e^-



FORMAL CHARGE = #VE − [½BE + NBE]

EXAMPLE: DRAW 2 RESONANCE FORMS OF METHANALDEHYDE (FORMALDEHYDE) CH_2O

CALC F.C.

FORMAL CHARGE = $\#VE - \left[\frac{1}{2}BE + NBE\right]$

NITROGEN VS OXYGEN

VE = 5 (ODD) VE = 6 (EVEN)

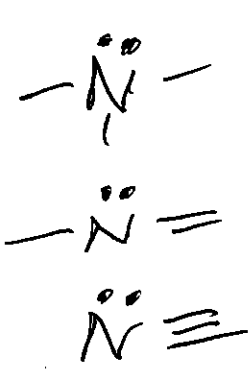
TO HAVE
FC = Ø AND OBEY OCTET RULE:

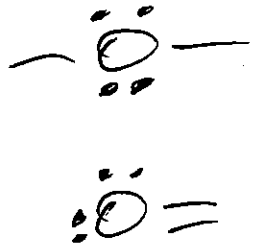
$\left[\frac{1}{2}BE + NBE\right] = 5$ $\left[\frac{1}{2}BE + NBE\right] = 6$

IMPLIES

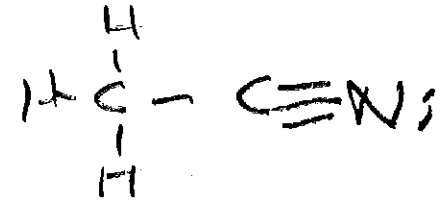
3 BONDS
2 NBE (1 PAIR)

2 BONDS
4 NBE (2 PAIRS)

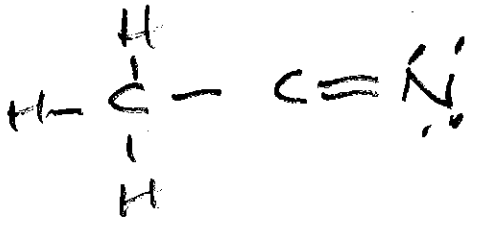


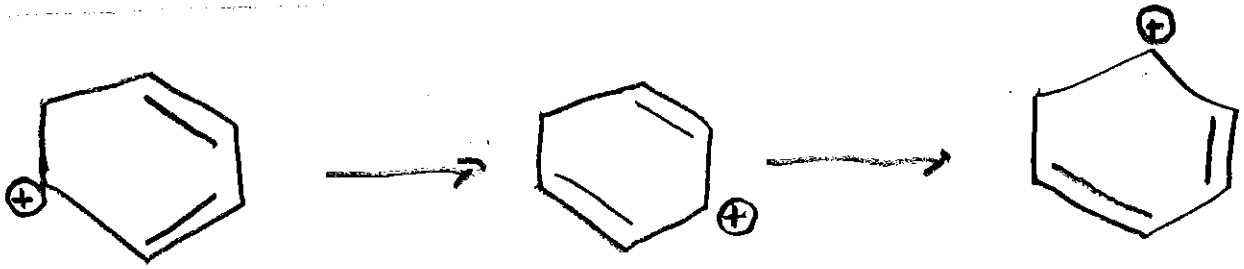


CH_3CN



CALC,
F.C.

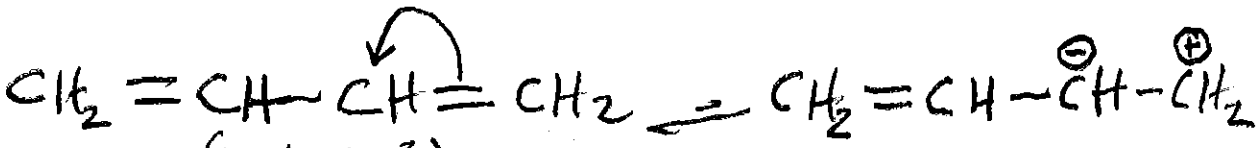


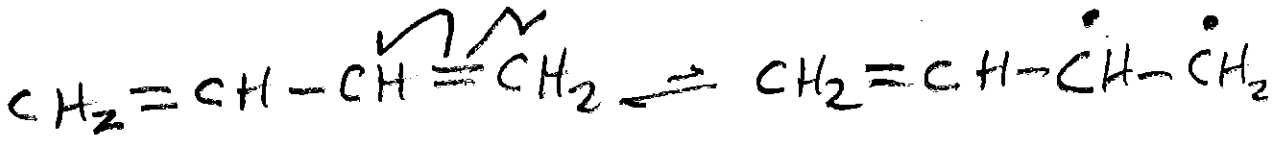


SHOW e^- MOVEMENT LEFT TO RIGHT

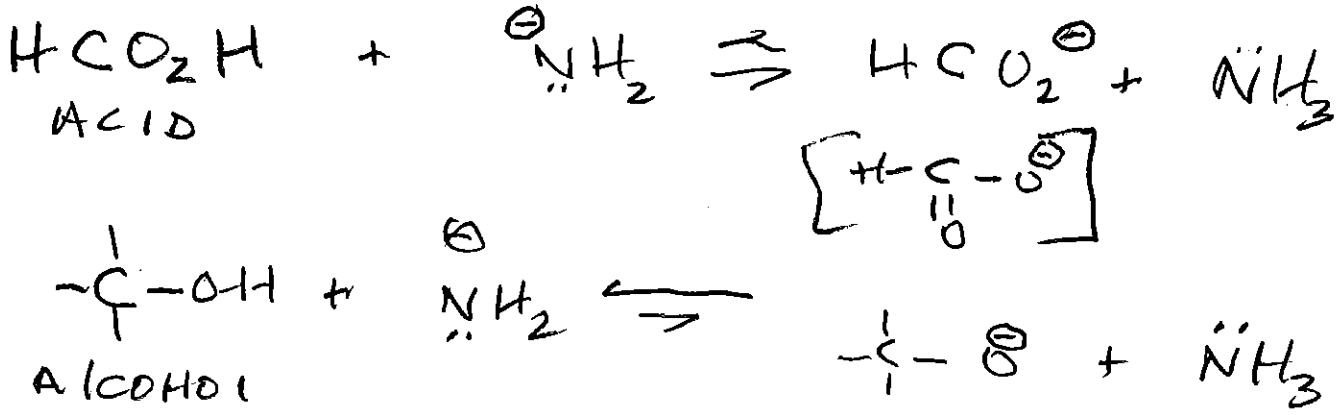
CARBON HYBRIDIZATION

CARBOCATION VS CARBANION VS FREE RADICAL





ACID-BASE REACTION



BUTANE CONFORMATIONS

DRAW, NAME, AND RANK

ANTI, GAUCHE, ECLIPSED, TOTAL ECLIPSED

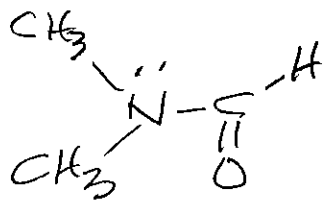
CYCLOHEXANE

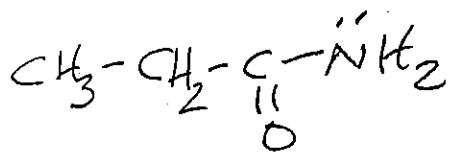
DRAW CHAIR CONFORMATIONS

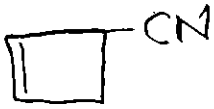
LABEL ALL HYDROGENS AS

UP VS DOWN AXIAL VS. EQUATORIAL

1. WHICH HAS HIGHER B.P. AND WHY? ?
WHAT IS FORMAL CHARGE ON N ATOM?





2. 

HOW MANY:

SIGMA
Pi
SINGLE
DOUBLE
TRIPLE

3. DRAW ALL IMPORTANT RESONANCE FORMS OF:

FOR PRACTICE