20161019

CHM151: ALKENES
STRUCTURE & REACTIVITY

ALKANES $\Rightarrow$ C_nH_{2n+2}

SUPPOSE SOME COMPOUND HAS $N(H) = m$, AND $N(C) = n$.

THEN THE DEGREE OF UNSATURATION IS:

$$DOU = n+1 - \frac{m}{2}$$

UNSATURATION COMES IN DIFFERENT FORMS:

- RING
- DOUBLE BOND
- TRIPLE BOND

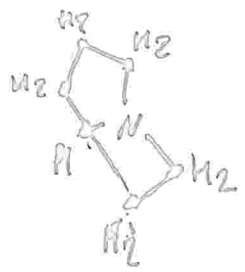
SPECIAL CASES:

HALOGEN COMPOUNDS — ADD THE NUMBER OF HALOGENS X TO NUMBER H TO ARRIVE AT EQUIVALENT HYDROCARBON FORMULA

ORGANOOXYGENIC COMPOUNDS — IGNORE O.

ORGANONITROGEN COMPOUND — SUBTRACT NUMBER OF N FROM N(H).

EXAMPLE

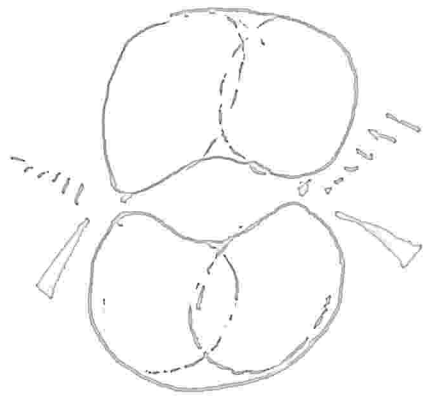


$\frac{10 - 10}{2} = 2$.

EXAMPLE

4-ISOPROPYL-1-METHYLCYCLOHEXENE

CIS-TRANS ISOMERISM



BARRIER TO ROTATION ABOUT CARBON-CARBON π BOND: ~350 kJ mol^{-1}

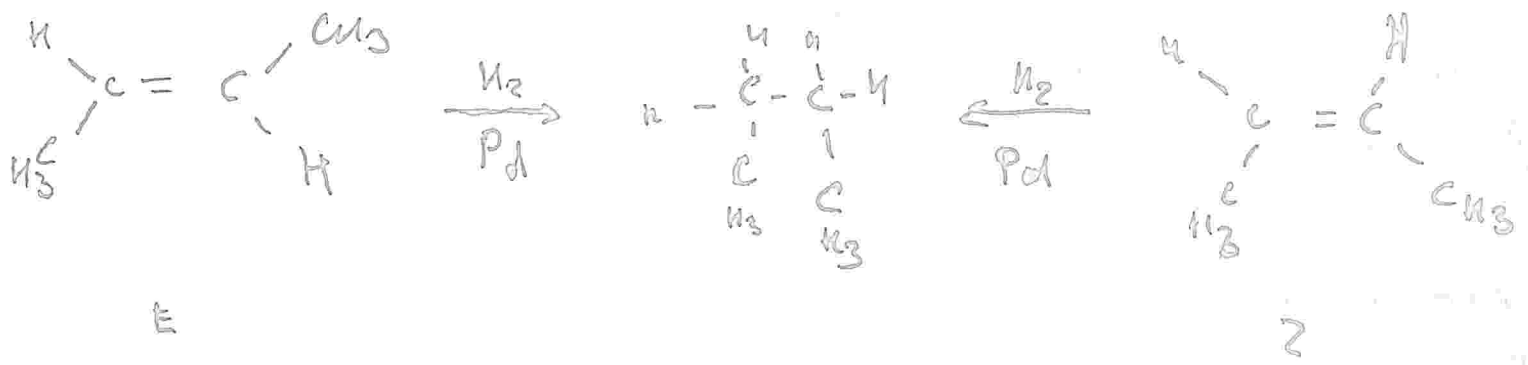
E/Z ISOMERISM SEQUENCE RULES

USE CAHN-INGOLD-PRELOG RULES TO ASSIGN PRIORITIES TO BOUND SUBSTITUENTS

Z: ZUSAMMEN

E: ENTGEGEN

STABILITY



E

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