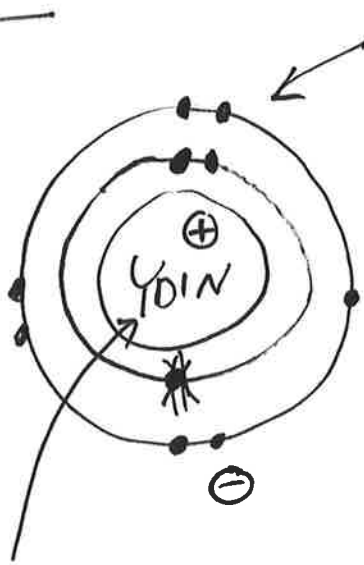


# KEMIAA

## ATOMI



ELEKTRONI PARI

2 kpl SISÄELEKTRONEJA

7 kpl ULKOELEKTRONEJA

[ 1-8 kpl YLEENSÄ,  
OSALLISTUVA T  
KEMIAALLISIIN  
SIDOKSIIN ]

PROTONEJA JA  
NEUTRONEJA.

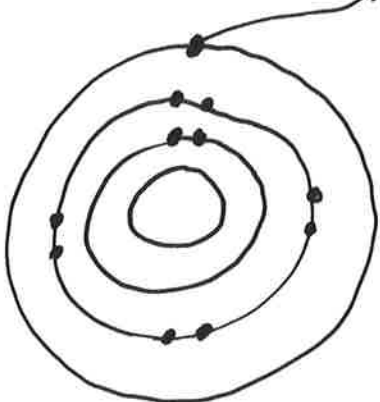
VARAUKSET

PROTONI	+1
NEUTRONI	0
ELEKTRONI	-1

ATOMI : PROTONEJA JA ELEKTRONEJA  
YHTÄ PALJON

↳ ULKOISESTI VARAUKSETON

Na - ATOMI POIS →



E: 11 kpl

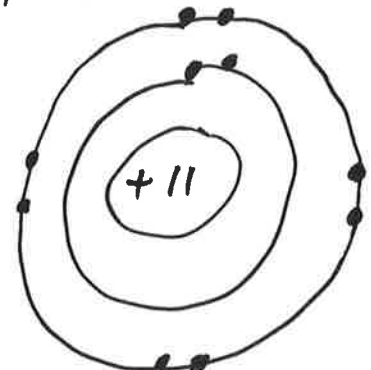
P: 11 kpl

VARAUS

$$+11 - 11 = 0$$



Na<sup>+</sup> - IONI



$$\text{VARAUS} = +11 - 10 = +1$$

ATOMIT HALUAVAT SAAOA  
ULOIMMAKSE KUORELLE 8 ELEKTRONIA

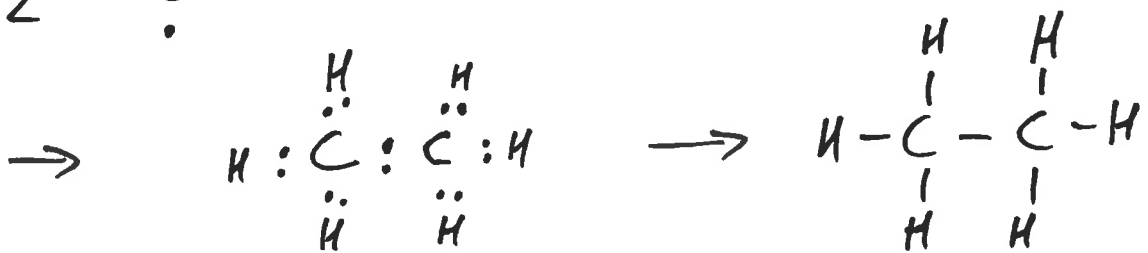
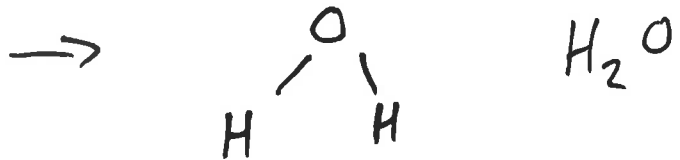
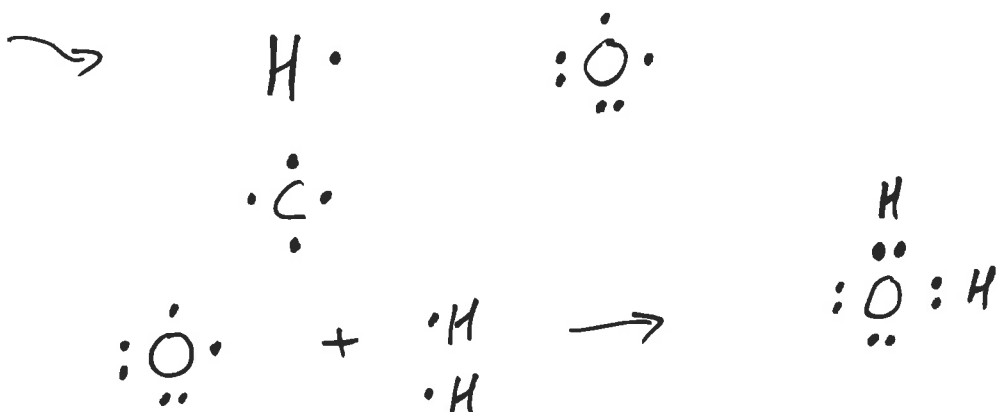
• OTTAMALLA LISÄÄ / LUOVUTTAMALLA

⇒ IONEJA (- / +)

• JAKAMALLA ELEKTRONEJA MUIDEN  
ATOMIEN KANSSA

⇒ KOVALENTTISIA SIDOKSIA

TALUKKOKIRJA S. 186

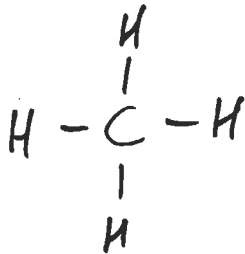


$\text{C}_2\text{H}_6$

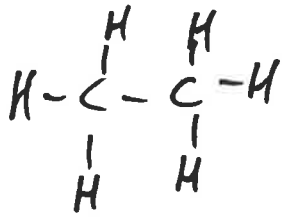
SÄÄNTÖ :  $\text{C}_1, \text{H}_1, \text{O}_1$  MUUT

$\text{C}_2\text{H}_3\text{O}$  Na S ?

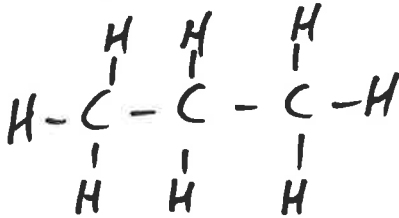
# HIIUVETYJÄ



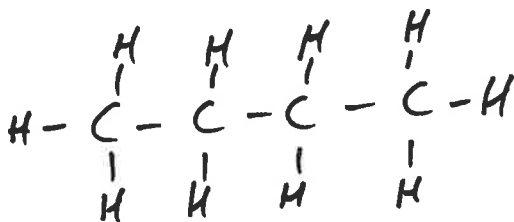
METAANI



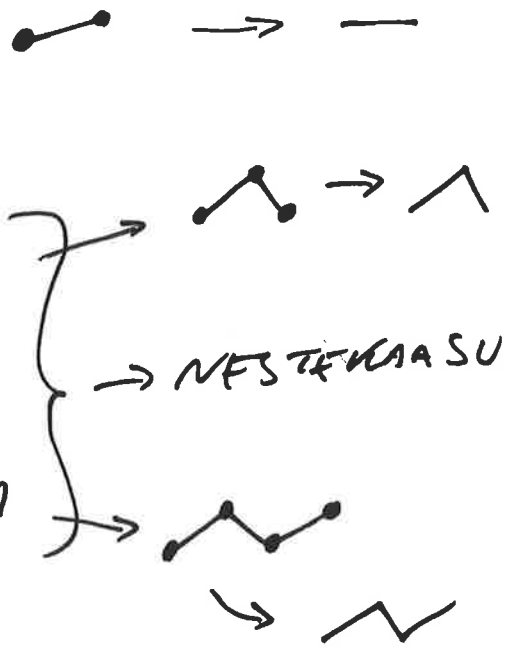
ETAANI



PROPAANI



BUTAANI



PENTAANI



HEKSAANI



HEPTAANI



OKTAANI



SYKLO-HEKSAANI



"ISO-OKTAANI"

2,2,4-TRIMETYYLI PENTAANI

ESIM. 95 OKTAANINEN BENSA  
PALAA KUIN SEOS

95% ISO-OKTAANI

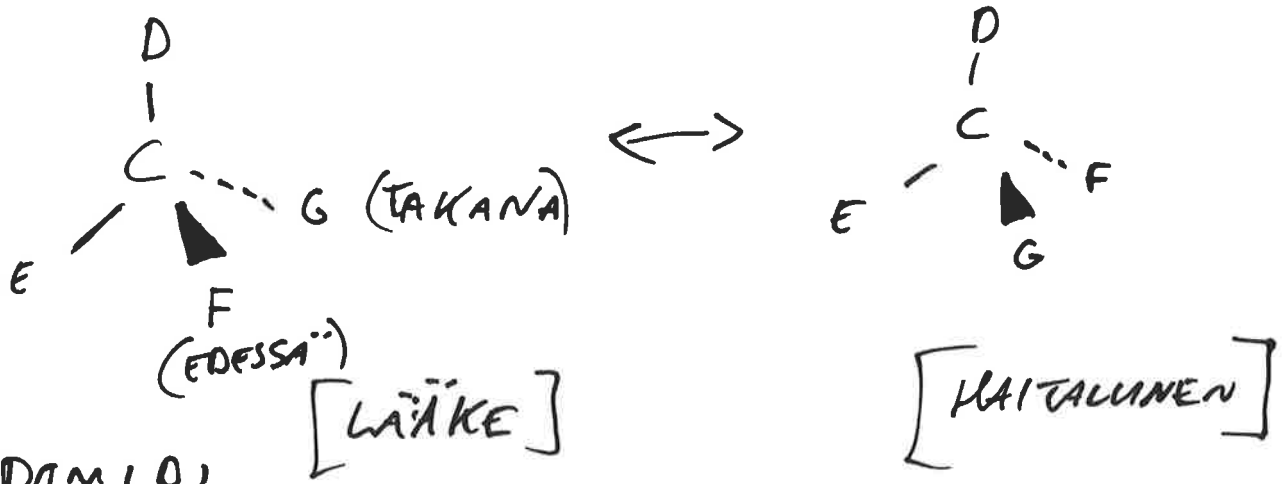
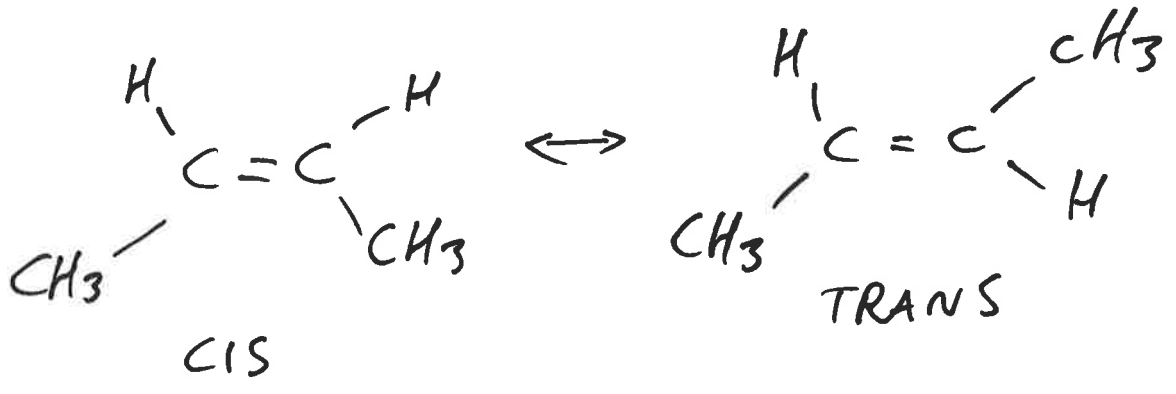
5% HEPTAANIA

ISUMMAT OKTAANILUVUT

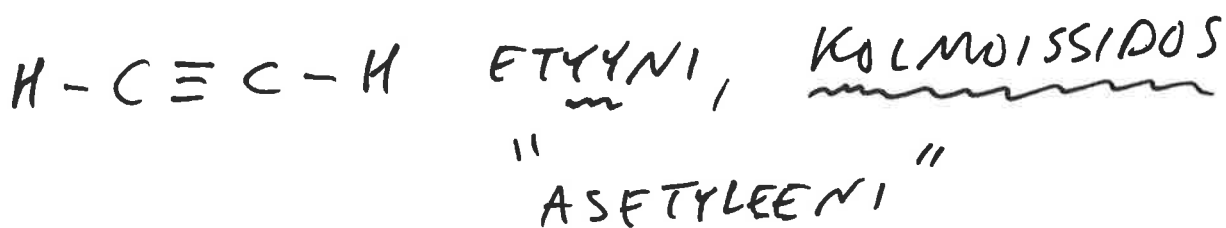
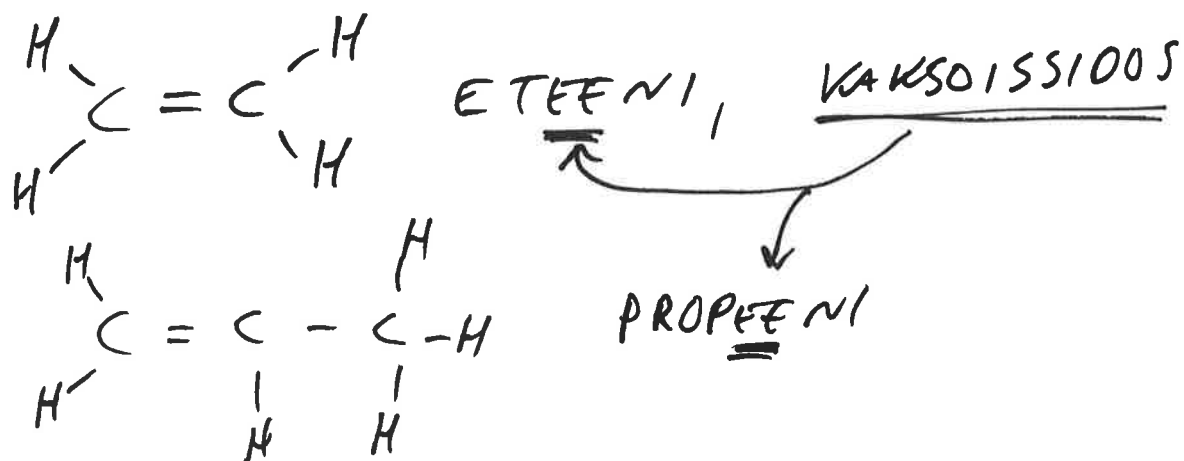
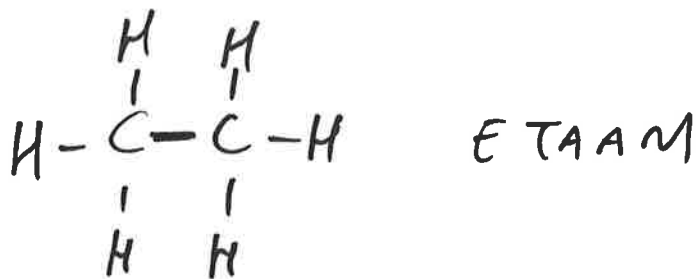
→ ASTEIKKA ON JATKETTU

ISOMEREJÄ = SAMAT OSAT, ERI  
JÄRJESTYKSESSÄ

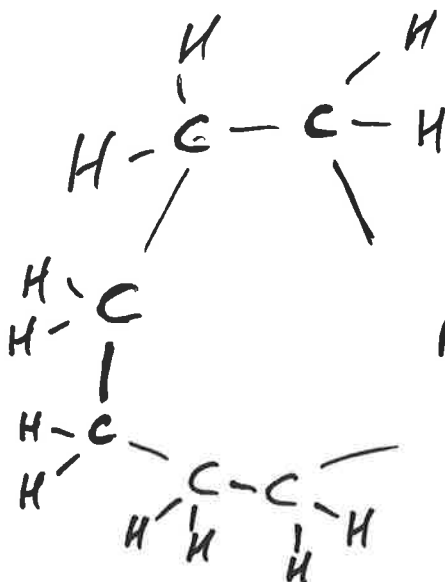
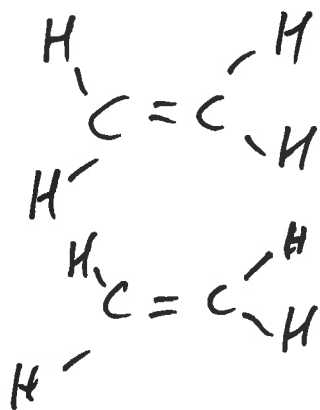
ESIM.



TALI DOMIO

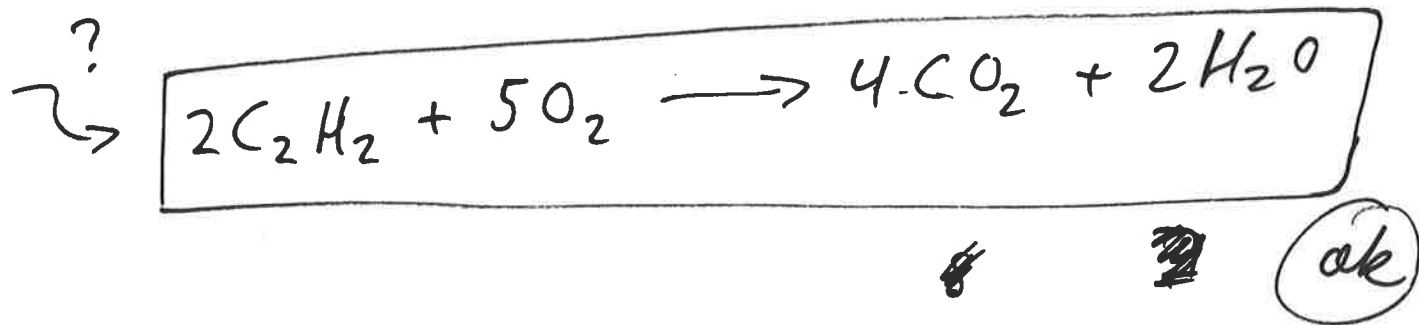
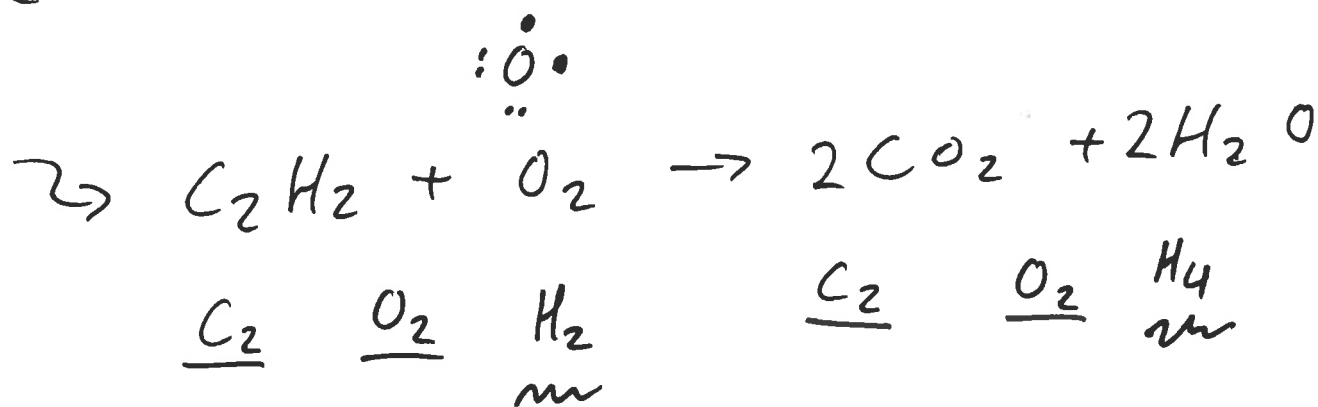
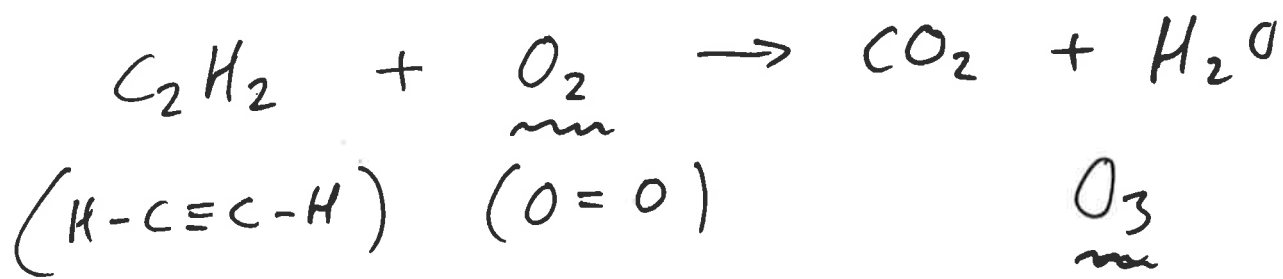


POLYMEERI



POLYETEENI,  
 MUOVI

ESIM. ASETYLEENI PALUA



# KAASUJEN TILAN YHTÄLÖ

$$pV = nRT$$

$p$  PAINE

$V$  TILAVUUS

$$R = 8,3145 \frac{\text{J}}{\text{mol} \cdot \text{K}}$$

$T$  = LÄMPÖTILA  $[T] = \text{K}$

$n$  = AINEMÄÄRÄ  $[n] = \text{mol}$   
= MOOLI

$$1 \text{ MOOLI} = 6,022 \cdot 10^{23} \text{ KPL}$$

NTP = NORMAL TEMPERATURE  
& PRESSURE

$$\begin{aligned} \Rightarrow V &= \frac{nRT}{p} = \frac{1 \cdot 8,3145 \cdot 273,15}{1,013 \cdot 10^5 \text{ Pa}} \\ &= 0,0224 \text{ m}^3 \\ &= 22,4 \text{ L} \\ &= 1 \text{ MOOLIN TILAVUUS} \end{aligned}$$



?  
 $\rightarrow$  SEOSSUHDE 2:5

$$\text{KUNN} \quad 1 \text{ MOL} = 22,4 \text{ L}$$

KUN 44 LITRAA  $C_2H_2$  PALAA,  
 HAPPEA KULUU  $5 \cdot 22 \text{ L} = 110 \text{ LITRAA}$ .  
 HIILIDIOKSIDIA SYNTYY  $4 \cdot 22 \text{ L} = 88 \text{ L}$ .  
 VESI HÖYRYÄ SYNTYY 44 L, ELI  
 2 MOOLIA. VEDEN MASSA?

$$M(H_2O) = 2 \cdot 1,00794 + 1 \cdot 15,9994$$

$$= 2 + 16 = 18 \frac{\text{g}}{\text{MOOLI}}$$

$$m = n \cdot M$$

$$= 2 \text{ mol} \cdot 18 \frac{\text{g}}{\text{mol}}$$

$$= \underline{\underline{36 \text{ g}}}$$