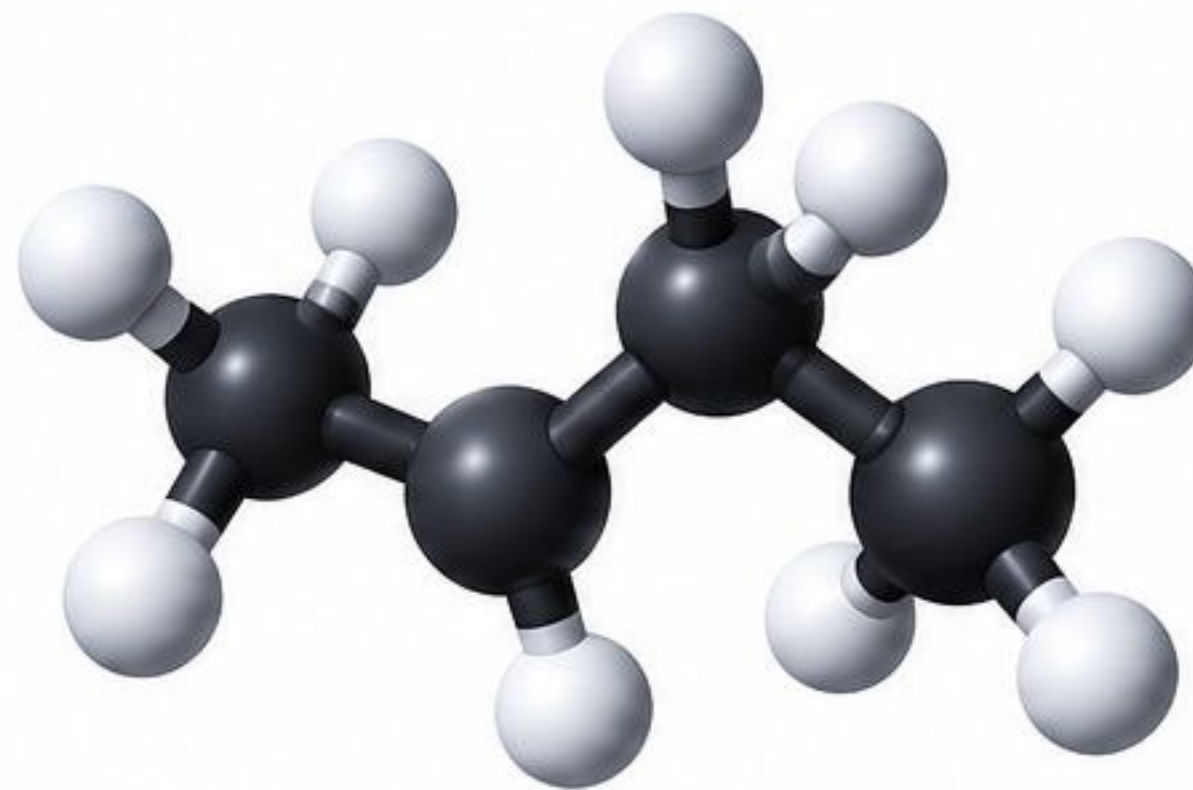
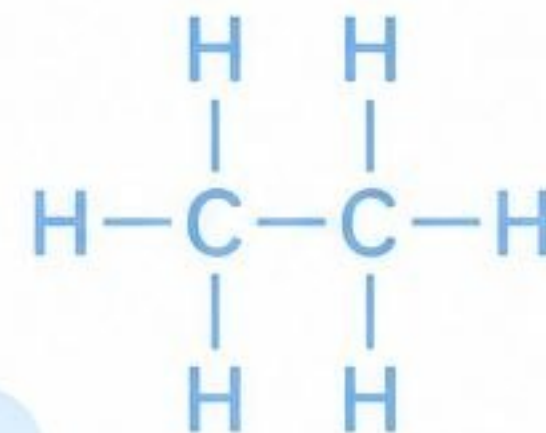


*Kimyo
hayotni boyitadi!*

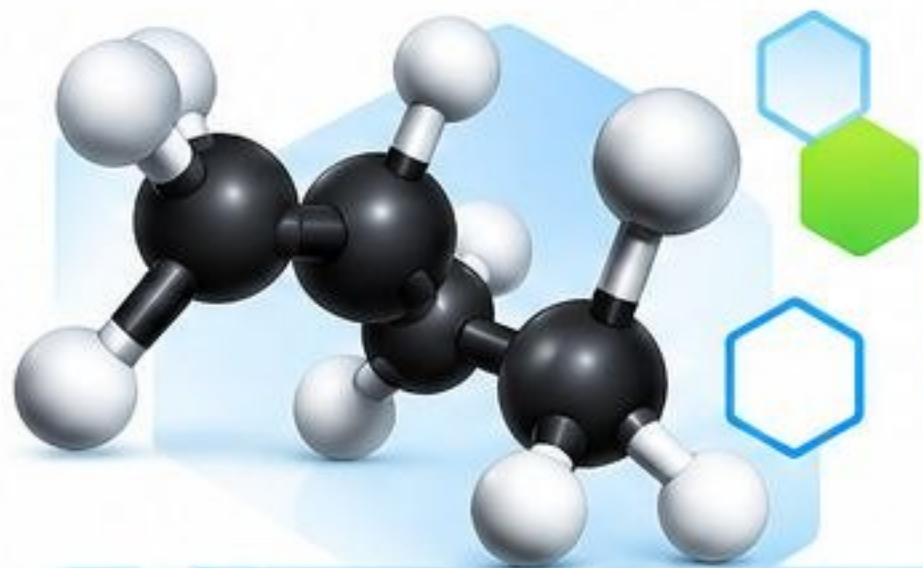


ALKANLAR

Tarkibi, tuzilishi, umumiy formulasi,
gomologik qatori, tabiatda uchrashi,
izomeriyasi, olinishi, fizik-kimyoviy
xossalari, ishlatilishi.

*Tabiatda - kimyo,
kimyoda - imkoniyat!*





Darsning maqsadi



Ta'limiy maqsad

- Alkanlarning tarkibi, tuzilishi va umumiy formulasini tushuntirish.
- Gomologik qator tushunchasini o'zlashtirish.
- Alkanlarning tabiatda uchrashi, izomeriyasi va olinishi usullarini bilish.
- Alkanlarning fizik va kimyoviy xossalarini tavsiflash.
- Alkanlarning ishlatilish sohalari haqida ma'lumot berish.



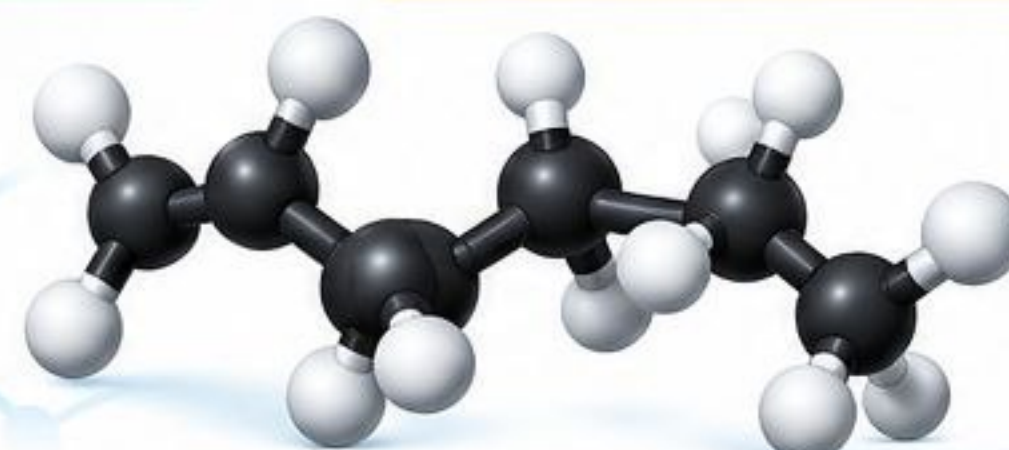
Tarbiyaviy maqsad

- Tabiat boyliklariga (neft, gaz) ongli munosabatda bo'lishni tarbiyalash.
- Atrof-muhitni muhofaza qilish va ekologik madaniyatni oshirish.
- Kimyo fanining jamiyat hayotidagi o'rnini anglash orqali kasbga qiziqishni shakllantirish.
- Tejamkorlik, mas'uliyatlik va tabiiy resurslardan oqilona foydalanish kabi fazilalarni tarbiyalash.



Rivojlantiruvchi maqsad

- O'quvchilarda mantiqiy fikrlash, tahlil qilish va taqqoslash ko'nikmalarini rivojlantirish.
- Kimyoviy jarayonlarni hayotiy misollar asosida tahlil qilish ko'nikmasini shakllantirish.
- Sxemalar, modellar va tenglamalar bilan ishlash malakasini oshirish.
- Kuzatish, umumlashtirish va xulosa chiqarish ko'nikmalarini rivojlantirish.
- Kimyo faniga qiziqish va ijodiy yondashuvni qo'llab-quvvatlash.



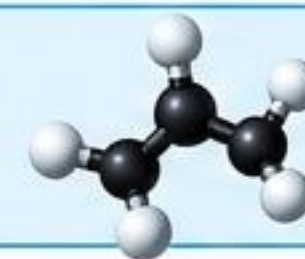


Darsning rejasi



1

Alkanlarning tarkibi va tuzilishi



2

Alkanlarning umumiy formulasi
va gomologik qatori



3

Alkanlarning tabiatda uchrashi



4

Alkanlarning izomeriyasi



5

Alkanlarning olinishi



6

Alkanlarning fizik xossalari



7

Alkanlarning kimyoviy xossalari



8

Alkanlarning ishlatilishi





Alkanlarning tarkibi va tuzilishi



Tarkibi

- Alkanlar uglerod (C) va vodorod (H) atomlaridan tashkii topgan to'yingan uglevodorodlardir.
- Ularning molekulasida faqat oddiy (σ) kovalent bog'lar mavjud.
- Umumiy formulasi:



(n – uglerod atomlari soni)



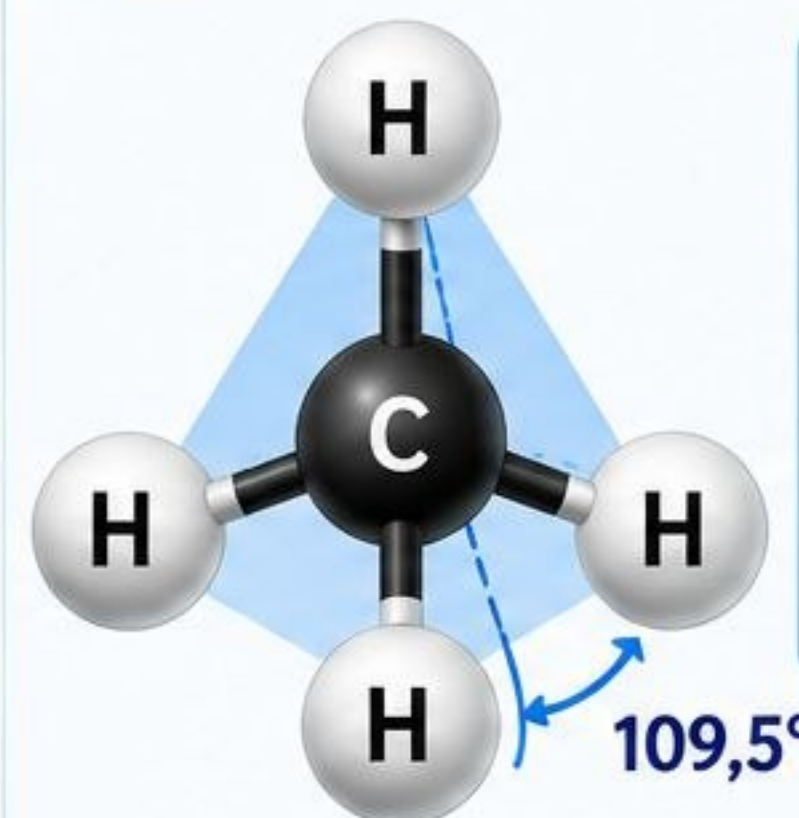
Tuzilishi

- Alkanlarda uglerod atomlari sp^3 -gibridlangan holatda bo'ladi.
- Uglerod atomlari bir-biri bilan va vodorod atomlari bilan faqat oddiy kovalent bog'lar orqali bog'langan.
- Uglerod atomining koordinatsion soni 4 ga teng (tetraedr shakl).
- Alkan molekullari ochiq zanjirli (to'g'ri yoki tarmoqlangan) tuzilishga ega.

Alkanlar – to'yingan uglevodorodlar.



Uglerod atomining tuzilishi (alkanlarda)



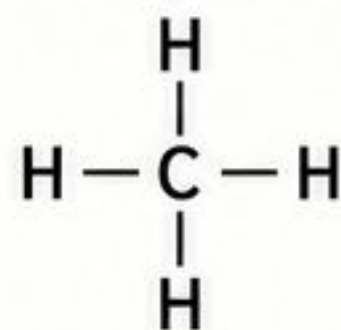
- ✓ Uglerod atomi sp^3 -gibridlangan.
- ✓ Tetraedr shaklida joylashgan.
- ✓ Barcha C–H va C–C bog'lar oddiy (σ) bog'lar.



Alkan molekullarining tuzilish modellari

Metan (CH_4)

Tarkibiy formula



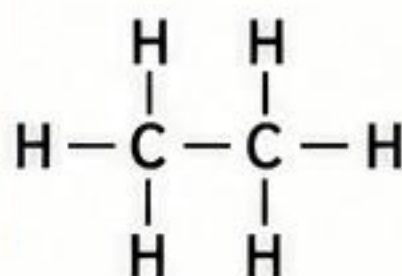
Molekulyar model



CH_4
(metan)

Etan (C_2H_6)

Tarkibiy formula



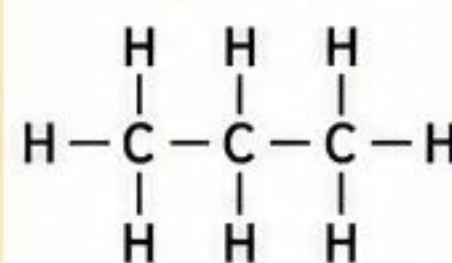
Molekulyar model



C_2H_6
(etan)

Propan (C_3H_8)

Tarkibiy formula



Molekulyar model

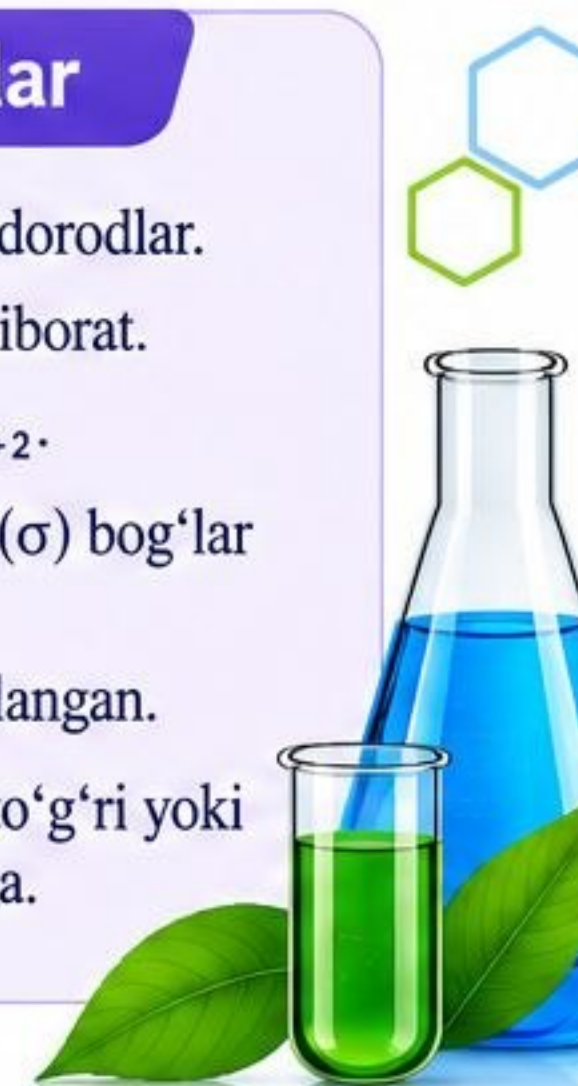


C_3H_8
(propan)



Asosiy xulosalar

- ✓ Alkanlar – to'yingan uglevodorodlar.
- ✓ Tarkibi C va H atomlaridan iborat.
- ✓ Umumiy formulasi $\text{C}_n\text{H}_{2n+2}$.
- ✓ Molekullarida faqat oddiy (σ) bog'lar mavjud.
- ✓ Uglerod atomlari sp^3 -gibridlangan.
- ✓ Molekullar ochiq zanjirli (to'g'ri yoki tarmoqlangan) tuzilishga ega.



Alkanlarning umumiy formulasi va gomologik qatori

Alkanlar – to‘yingan uglevodorodlar



Umumiy formulasi



Bu yerda:

n – uglerod atomlari soni
($n = 1, 2, 3, \dots$)

2n+2 – vodorod atomlari soni.

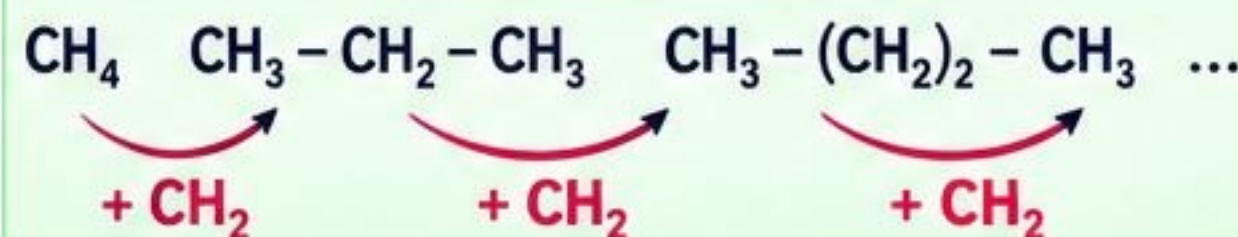
Har bir keyingi a‘zoda oldingisiga nisbatan **–CH₂–** guruhiga ortadi.



Gomologik qator

- Bir-biridan **–CH₂–** guruhiga farqlanuvchi moddalarning ketma-ketligi **gomologik qator** deb ataladi.
- Gomologik qator a‘zolari o‘xshash kimyoviy xossalarga ega.
- Qator bo‘ylab molekulyar massa ortib boradi va fizik xossalar davriy ravishda o‘zgaradi.

Umumiy ko‘rinishi:



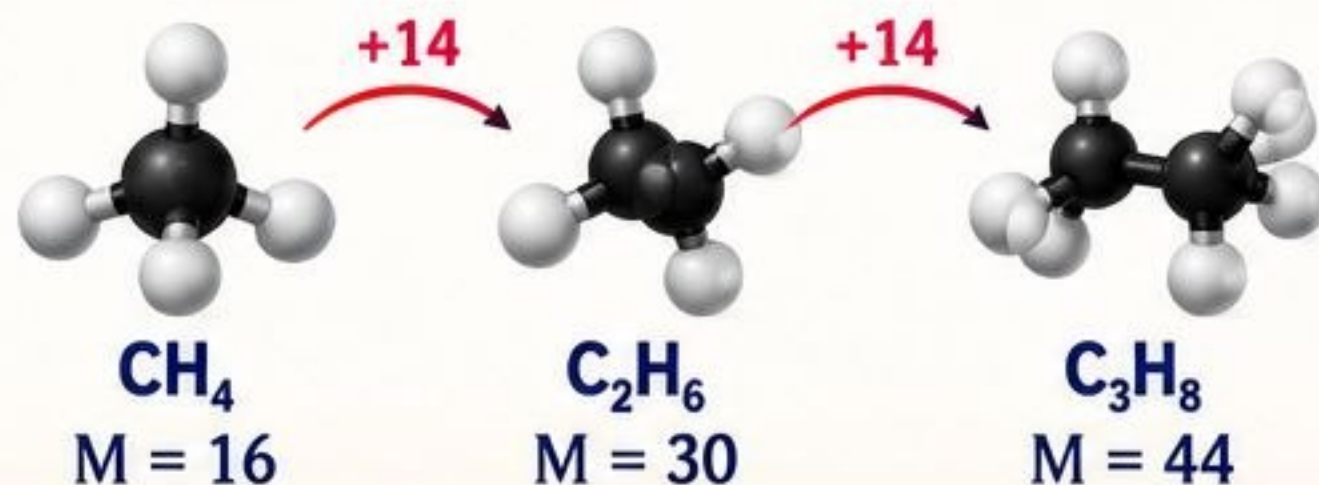
Gomologik qatorning birinchi a‘zolari

Nomlanishi	Molekulyar formulasi	Strukturaviy formulasi	–CH ₂ – guruhlar soni (n)
Metan	CH ₄	CH ₄	1
Etan	C ₂ H ₆	CH ₃ – CH ₃	2
Propan	C ₃ H ₈	CH ₃ – CH ₂ – CH ₃	3
Butan	C ₄ H ₁₀	CH ₃ – CH ₂ – CH ₂ – CH ₃	4
Pentan	C ₅ H ₁₂	CH ₃ – (CH ₂) ₃ – CH ₃	5
Geksan	C ₆ H ₁₄	CH ₃ – (CH ₂) ₄ – CH ₃	6
Geptan	C ₇ H ₁₆	CH ₃ – (CH ₂) ₅ – CH ₃	7
Oktan	C ₈ H ₁₈	CH ₃ – (CH ₂) ₆ – CH ₃	8
Nonan	C ₉ H ₂₀	CH ₃ – (CH ₂) ₇ – CH ₃	9
Dekan	C ₁₀ H ₂₂	CH ₃ – (CH ₂) ₈ – CH ₃	10

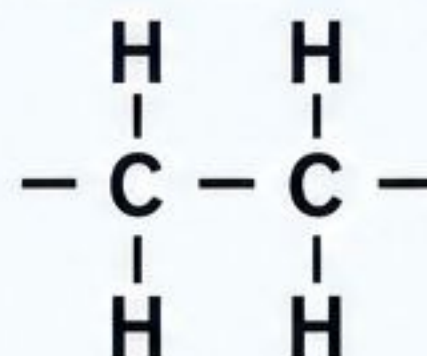


Molekulyar massa ortib boradi

Gomologik qator bo‘ylab molekulyar massa har bir **–CH₂–** guruhiga 14 ga ortadi.



–CH₂– guruhi



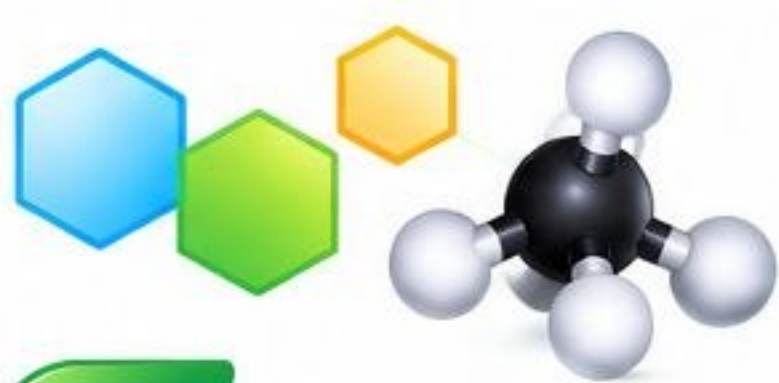
–CH₂– guruhi
(gomologik qadam)



Xulosa

- ✓ Alkanlarning umumiy formulasi **C_nH_{2n+2}**.
- ✓ Bir-biridan **–CH₂–** guruhiga farqlanuvchi moddalarning ketma-ketligi gomologik qator.
- ✓ Gomologik qator a‘zolari o‘xshash kimyoviy xossalarga ega.
- ✓ Qator bo‘ylab molekulyar massa 14 ga ortadi.
- ✓ **–CH₂–** guruhi gomologik qadam deb ataladi.





Alkanlarning tabiatda uchrashi

Alkanlar tabiatda keng tarqalgan organik birikmalardir.



Asosiy manbalari

- ✓ Alkanlar tabiatda asosan neft, tabiiy gaz va ko'mir tarkibida uchraydi.
- ✓ Ular yer qobig'ining chuqur qatlamlarida organik moddalarning o'zgarishi natijasida hosil bo'ladi.
- ✓ Alkanlar shuningdek, ba'zi o'simlik va hayvon organizmlarida ham mavjud.



Neftda

- Neft – turli uglevodorodlar aralashmasi bo'lib, uning asosiy qismini alkanlar tashkil etadi.
- Neftda asosan $C_5H_{12} - C_{40}H_{82}$ oralig'idagi alkanlar uchraydi.
- Neftdan benzin, kerosin, dizel yoqilg'isi, moylar va boshqa mahsulotlar olinadi.



Neft



Tabiiy gazda

- Tabiiy gazning asosiy tarkibiy qismi – metan (CH_4).
- Shuningdek, etan (C_2H_6), propan (C_3H_8), butan (C_4H_{10}) va boshqa quyi alkanlar mavjud.
- Tabiiy gaz toza va ekologik jihatdan qulay yoqilg'i manbai hisoblanadi.



Tabiiy gaz



Ko'mirda

- Ko'mir tarkibida ham alkanlar mavjud, asosan yuqori molekulyar massali alkanlar.
- Ko'mir quruq hayvon va o'simlik qoldiqlarining uzoq vaqt davomida o'zgarishi natijasida hosil bo'lgan.
- Ko'mirda alkanlar boshqa uglevodorodlar bilan birga uchraydi.



Ko'mir



O'simliklarda

- O'simliklar yuzasida mum qatlami mavjud bo'lib, uning tarkibida uzun zanjirli alkanlar ($C_{20}H_{42}$, $C_{30}H_{62}$ va boshqalar) uchraydi.
- Bu alkanlar o'simliklarni suv yo'qotishdan himoya qiladi.



O'simliklar yuzasidagi mum



Hayvonlarda

- Ba'zi hayvonlar organizmida alkanlar uchraydi.
- Masalan, kitlarning yog'ida uzun zanjirli alkanlar mavjud.
- Hasharotlar (asalarilar) mumida ham alkanlar uchraydi.



Kit yog'i



Asalari mumi



Tabiatda uchraydigan ba'zi alkanlar

Nomlanishi	Formulasi	Uchrash joyi
Metan	CH_4	Tabiiy gaz, ko'mir
Etan	C_2H_6	Tabiiy gaz, neft
Propan	C_3H_8	Tabiiy gaz, neft
Butan	C_4H_{10}	Tabiiy gaz, neft
Pentan va yuqorilari	$C_5H_{12} \dots$	Neft
Uzun zanjirli alkanlar	$C_{20}H_{42} \dots$	O'simlik mumlari, hayvon yog'lari



Xulosa: Alkanlar tabiatda juda keng tarqalgan bo'lib, asosan neft, tabiiy gaz, ko'mir, shuningdek, o'simlik va hayvon organizmlarida uchraydi.





Alkanlarning izomeriyasi

Alkanlar uchun strukturaviy (zanjir) izomeriya xos.



Izomeriya nima?

Bir xil molekulyar formulaga ega, lekin atomlarning bog'lanish tartibi (tuzilishi) har xil bo'lgan moddalar **izomerlar** deb ataladi.

Alkanlarda izomeriya turi:
zanjir (strukturaviy) izomeriya



Alkanlarda izomeriya sababi

- Uglerod atomlari o'zaro bog'lanib, tarmoqlangan zanjir hosil qilishi mumkin.
- Zanjir tuzilishi o'zgarganda, molekula tuzilishi ham o'zgaradi, lekin molekulyar formula o'zgarmaydi.

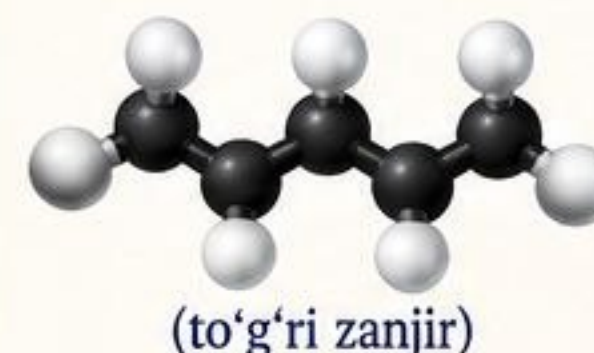
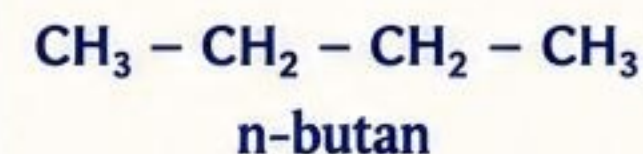
Izomerlar fizik va kimyoviy xossalari bilan farqlanadi.



Misol: C_4H_{10} ning izomerlari

C_4H_{10} formulaga ega ikkita izomer mavjud:

To'g'ri zanjirli izomer



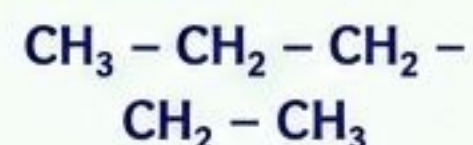
Tarmoqlangan izomer



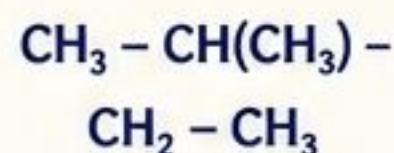
C_5H_{12} ning izomerlari

C_5H_{12} formulaga ega 3 ta izomer mavjud:

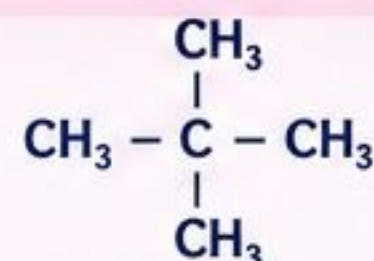
n-pentan (to'g'ri zanjirli)



2-metilbutan



2,2-dimetilpropan



Izomeriya qoidasi

- Uglerod atomlari soni 4 dan boshlab alkanlarda izomeriya kuzatiladi (CH_4 , C_2H_6 , C_3H_8 izomerga ega emas).
- Uglerod atomlari soni ortishi bilan izomerlar soni tez ko'payadi.
- Izomerlar bir-biridan tuzilishi, qaynash harorati, zichligi va boshqa fizik xossalari bilan farqlanadi.

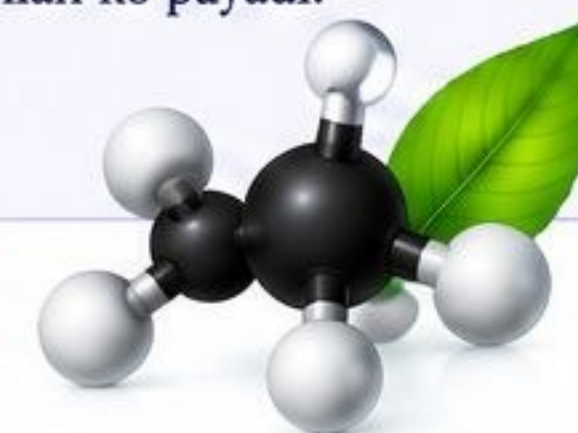
Masalan:

C_6H_{14} – 5 ta izomer
 C_7H_{16} – 9 ta izomer
 C_8H_{18} – 18 ta izomer mavjud.



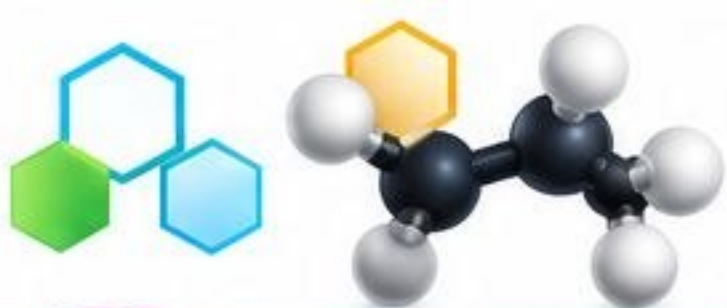
Asosiy xulosalar

- Alkanlarda zanjir (strukturaviy) izomeriya xos.
- Bir xil molekulyar formulaga ega moddalar turli tuzilishga ega bo'lishi mumkin.
- Izomerlar fizik va kimyoviy xossalari bilan farqlanadi.
- Zanjir tarmoqlanishi uglerod atomlari soni ortishi bilan ko'payadi.



“Tuzilishi turlicha – xossalari ham turlicha.”





Alkanlarning olinishi

Alkanlar sanoatda va laboratoriyada turli usullar bilan olinadi.

1 Tabiiy manbalardan ajratib olish

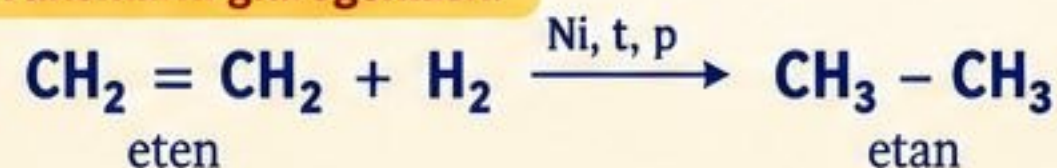
- Alkanlar tabiatda tayyor holda uchraydi.
- Ular neft, tabiiy gaz va ko'mir tarkibidan ajratib olinadi.
- Asosan fraksion haydash usuli qo'llaniladi.



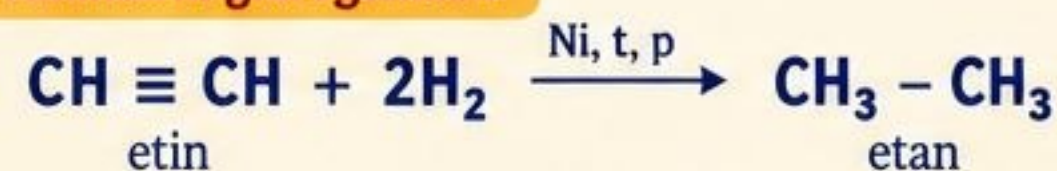
2 To'ymagan uglevodorodlarni gidrogenlash

- Alkenlar va alkinlar vodorod qo'shilishi natijasida alkanlar hosil bo'ladi.

Alkenlarni gidrogenlash:



Alkinlarni gidrogenlash:



Ni – katalizator, t – harorat, p – bosim.

3 Galogenalkanlardan olish (Vyurts reaksiyasi)

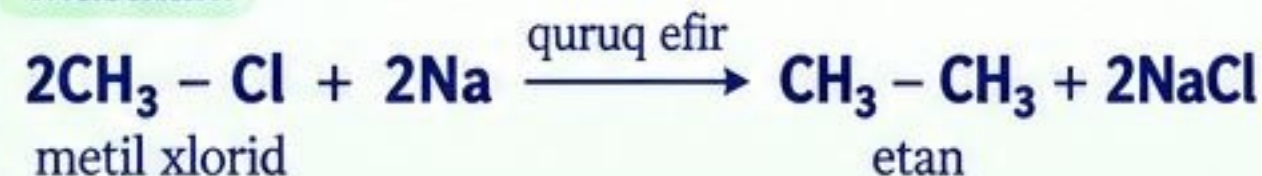
- Alkilgalogenidlar natriy metalli bilan quruq efir muhitida ta'sirlashib, alkanlar hosil qiladi.



R – alkil guruhi (CH_3 , C_2H_5 va h.k.)

X – galogen (Cl, Br, I)

Masalan:



4 Karboksilat tuzlarining dekarboksillanishi (soda-ohak usuli)

- Karboksilik kislota tuzlari natriyning gidroksidi bilan qizdirilganda alkanlar hosil bo'ladi.



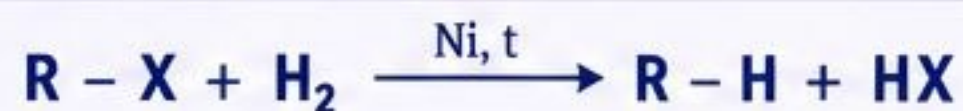
Masalan:



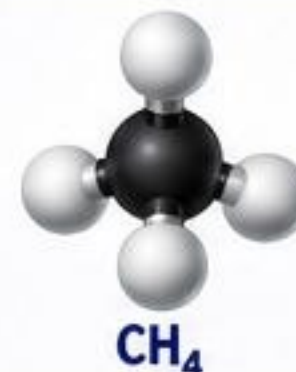
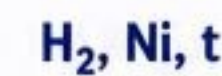
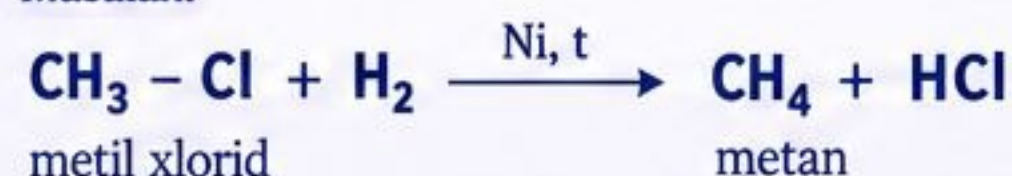
Bu usulda karbon atomlari soni 1 taga kamayadi.

5 Galogenalkanlarni qaytarish (gidrogenoliz)

- Alkilgalogenidlar vodorod bilan qaytarilib, alkanlar hosil bo'ladi.



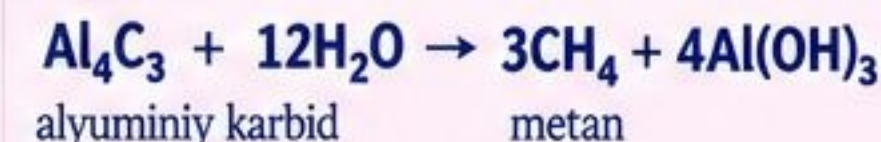
Masalan:



6 Metall karbidlarning gidrolizi

- Ba'zi metall karbidlar suv bilan ta'sirlashganda alkanlar hosil bo'ladi.

Masalan:



Xulosa

- Alkanlar tabiatda tayyor holda uchraydi va sanoatda ajratib olinadi.
- Alkenlar va alkinlarni gidrogenlash orqali alkanlar olinadi.
- Alkilgalogenidlar Vyurts reaksiyasi yoki vodorod bilan qaytarish orqali alkanlarga aylantiriladi.
- Karboksilat tuzlarining dekarboksillanishi va metall karbidlarning gidrolizi ham alkanlar olish usullaridir.



Turli yo'l – bitta maqsad: barqaror alkan molekulas!



Alkanlarning fizik xossalari

Alkanlar – sodda tuzilishli, lekin muhim xossalarga ega bo'lgan to'yingan uglevodorodlardir.

1 Agregat holati

Gaz

$C_1 - C_4$
(metan – butan)



Oddiy sharoitda gaz holatida.

Suyuqlik

$C_5 - C_{17}$
(pentan – heptadekan)



Oddiy sharoitda suyuqlik holatida.

Qattiq

C_{18} va undan katta



Oddiy sharoitda qattiq holatida.

2 Rangi va hidi



Rangsiz, hidsiz moddalar.



Toza alkanlar o'ziga xos hidga ega emas.

3 Zichligi

Alkanlar suvga nisbatan yengil. Ularning zichligi $0,6 - 0,8 \text{ g/cm}^3$ atrofida.



Alkan

Suv



Alkanlar suvda erimaydi va suv yuzasida qavat hosil qiladi.

4 Eruvchanligi



Suvda erimaydi.



Organik erituvchilarda yaxshi eriydi (benzin, efir, benzol va b.).



Alkanlar qutbsiz moddalar bo'lgani uchun qutbsiz organik erituvchilarda eriydi.

5 Qaynash va erish harorati

- Molekulyar massa ortishi bilan qaynash va erish harorati oshadi.
- Tarmoqlangan izomerlar to'g'ri zanjirli larga nisbatan pastroq haroratda qaynaydi.
- Pastki alkanlar uchuvchan, yuqori alkanlar kam uchuvchan bo'ladi.



Zanjir uzunlashgan sari molekular orasidagi ta'sir kuchi ortadi.

6 Aholidagi holati (xulosa)



Alkanlar rangsiz, hidsiz, suvda erimaydigan, suvdan yengil, molekulyar massa ortishi bilan qaynash va erish harorati oshadigan moddalar hisoblanadi.



Ba'zi alkanlarning fizik xossalari

Nomi	Formulasi	M (g/mol)	Erish harorati (°C)	Qaynash harorati (°C)	Agregat holati (25 °C da)
Metan	CH_4	16	-182,5	-161,5	gaz
Etan	C_2H_6	30	-183,3	-88,6	gaz
Propan	C_3H_8	44	-187,7	-42,1	gaz
Butan	C_4H_{10}	58	-138,3	-0,5	gaz
Pentan	C_5H_{12}	72	-129,7	36,1	suyuqlik
Geksan	C_6H_{14}	86	-95,0	68,7	suyuqlik
Oktan	C_8H_{18}	114	-56,8	125,6	suyuqlik
Dekan	$C_{10}H_{22}$	142	-29,7	174,0	suyuqlik
Eikosan	$C_{20}H_{42}$	282	36,8	343,0	qattiq

“Kichik molekularlar – uchuvchan, katta molekularlar – mustahkam.”





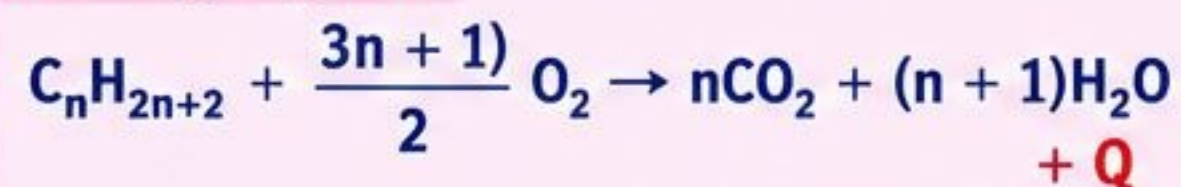
Alkanlarning kimyoviy xossalari

Alkanlar kimyoviy jihatdan kam faol, lekin ma'lum sharoitlarda reaksiyaga kirishadi.

1 Yonish (to'liq oksidlanish)

Alkanlar kislorodda yonib, karbonat angidrid va suv hosil qiladi. Ko'p miqdorda issiqlik ajraladi.

Umumiy tenglama:



Masalan (metan):

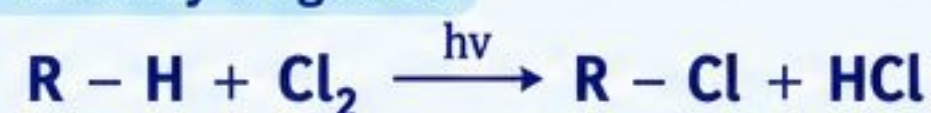


Alkanlar – yaxshi yonuvchi yoqilg'ilardir.

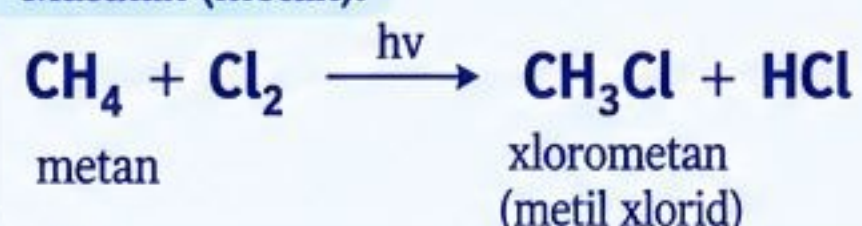
2 Galogenlar bilan almashinish (reaksia, yorug'likda)

- Alkanlar xlor yoki brom bilan ultrabinafsha nurlar ta'sirida almashinish reaksiyasiga kirishadi. Bir yoki bir necha vodorod atomlari galogen atomlari bilan almashinadi.

Umumiy tenglama:



Masalan (metan):

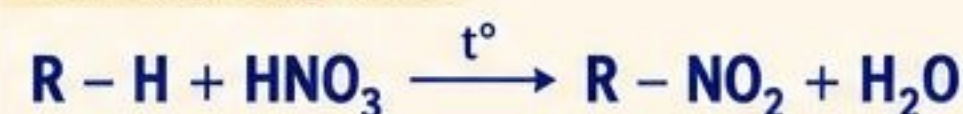


Reaksiya yorug'likda ($h\nu$) ketadi.

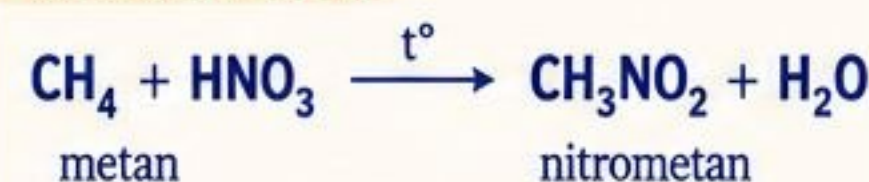
3 Nitrolanish (konsentrlangan HNO_3 , t°)

- Alkanlar konsentrlangan azot kislotasi ta'sirida nitrobirikmalar hosil qiladi.

Umumiy tenglama:



Masalan (metan):

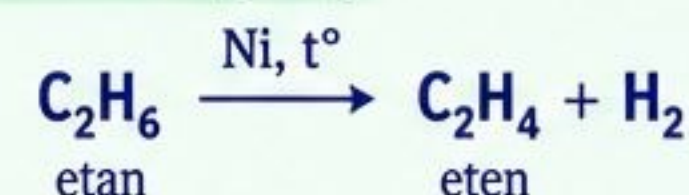


Reaksiya yuqori haroratda ($\approx 400-500^\circ C$) ketadi.

4 Degidrogenlash (yuqori harorat, katalizator)

Alkanlar yuqori haroratda, katalizator ishtirokida vodorod ajratib, alkenlarga aylanadi.

Masalan (etan):

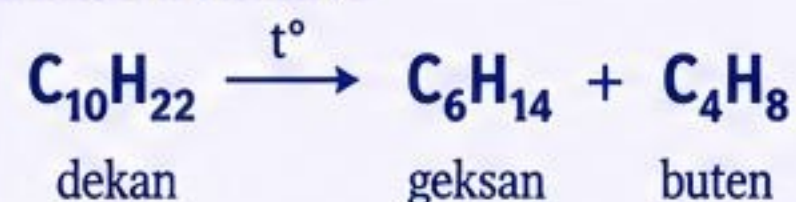


Bu jarayon sanoatda alkenlar olishda qo'llaniladi.

5 Kreking (yuqori harorat)

- Uzoq zanjirli alkanlar yuqori haroratda parchalanib, qisqa zanjirli alkan va alkenlarga aylanadi.

Masalan (dekan):

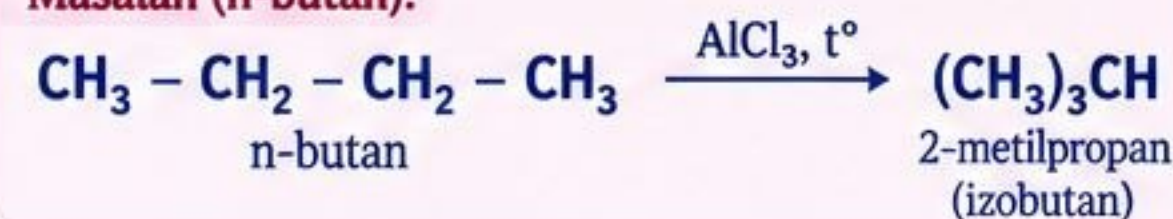


Kreking neft mahsulotlarini qayta ishlashda muhim jarayondir.

6 Izomerlanish (katalizator, t°)

To'g'ri zanjirli alkanlar katalizator ishtirokida tarmoqlangan alkanlarga aylanadi.

Masalan (n-butan):



Tarmoqlangan alkanlar oktan soni yuqori bo'lib, benzin sifatini yaxshilaydi.



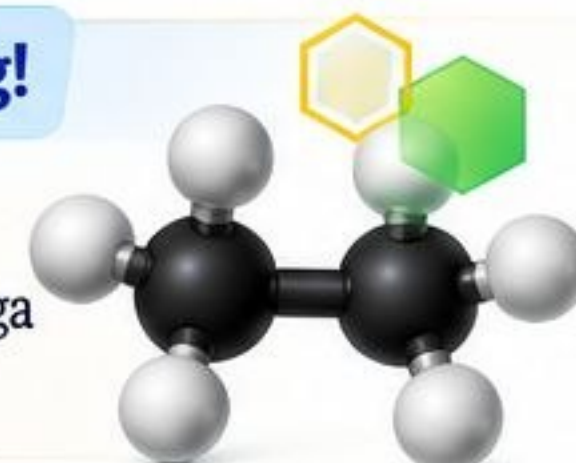
Asosiy xulosalar

- Alkanlar asosan yonish, almashinish, degidrogenlash, kreking va izomerlanish reaksiyalariga kirishadi.
- Ular kimyoviy jihatdan kam faol, chunki faqat σ -bog'lardan iborat.
- Sanoatda alkanlarning kimyoviy xossalariidan yoqilg'i, alkenlar va boshqa muhim mahsulotlar olishda foydalaniladi.



Eslab qoling!

Alkanlar asosan almashinish reaksiyalariga kirishadi.





Alkanlarning ishlatilishi

Alkanlar – muhim energiya manbai va ko'plab kimyoviy mahsulotlar olishda xomashyo hisoblanadi.

1 Yoqilg'i sifatida

Alkanlar yuqori issiqlik ajratadi, shuning uchun asosiy yoqilg'i manbai hisoblanadi.



Tabiiy gaz
(metan – C_1H_4)



Suyultirilgan gaz
(propan, butan – C_3H_8 , C_4H_{10})



Benzin
(C_5H_{12} – $C_{10}H_{22}$)



Dizel yoqilg'isi
($C_{10}H_{22}$ va undan yuqorilari)

4 Parafin va mumlar

Uzoq zanjirli alkanlardan parafin va mumlar olinadi.



Sham ishlab chiqarish



Parafin
(tibbiyot, kosmetika)



Kosmetik vositalar
(kremlar, malhamlar)

2 Sanoatda xomashyo sifatida

Alkanlardan turli kimyoviy moddalar olinadi.



Etilen, propilen
(plastmassa ishlab chiqarish uchun)



Sintetik kauchuk
(shina, rezina mahsulotlar)



Polimerlar
(polietilen, polipropilen va b.)



Sintetik tolalar
(naylon, lavsan va b.)

5 Sanoat moylari va vazelin

Yuqori molekulyar alkanlar asosida moylash materiallari va vazelin olinadi.



Sanoat moylari
(mexanizmlarni moylash)



Vazelin
(tibbiyot, kosmetika)

3 Erituvchi sifatida

Suyuqlik alkanlar (pentan, geksan, heptan va b.) yaxshi erituvchi hisoblanadi.



- Yog'lar
- Mumlar
- Smolalar
- Bo'yoqlar eritishda ishlatiladi.



Bo'yoq va laklar
ishlab chiqarishda

6 Bitum va asfalt

Juda uzun zanjirli alkanlar ($C_{20}H_{42}$ va undan yuqorilari) qayta ishlanib, bitum va asfalt olinadi.



Yo'l qurilishida
(asfalt)



Bitum
(qurilish materiallari)

Xulosa

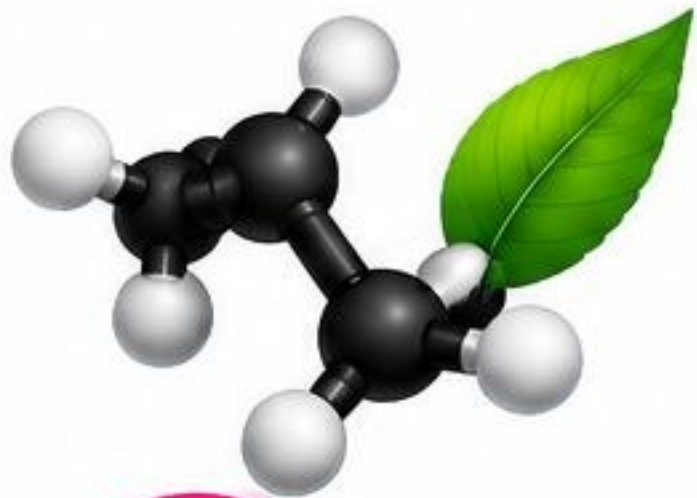
- ✓ Alkanlar energiya manbai, erituvchi va muhim kimyoviy mahsulotlar olishda xomashyo sifatida keng qo'llaniladi.
- ✓ Ularning ishlatilishi zanjir uzunligiga bog'liq.
- ✓ Alkanlar hayotimizda, sanoatda, transportda, qurilishda, tibbiyot va maishiy sohalarda muhim o'rin tutadi.

Esda tuting!

Qisqa zanjirli alkanlar – yoqilg'i va gaz, o'rta zanjirli alkanlar – erituvchi, uzun zanjirli alkanlar – mum, moy, bitum.



“Alkanlar – bugungi kun energiyasi va ertangi kun imkoniyatlari.”



Mustahkamlash uchun topshiriq

Mavzu: Alkanlar

*Bilimingni
sinab ko'r!*

1

Formulani toping

Alkanlarning umumiy formulasi C_nH_{2n+2} dan foydalanib, berilgan n qiymatlar uchun molekulyar formulani yozing.

$n = 1$

$C_nH_{2n+2} = ?$

$n = 2$

$C_nH_{2n+2} = ?$

$n = 3$

$C_nH_{2n+2} = ?$

$n = 5$

$C_nH_{2n+2} = ?$

$n = 7$

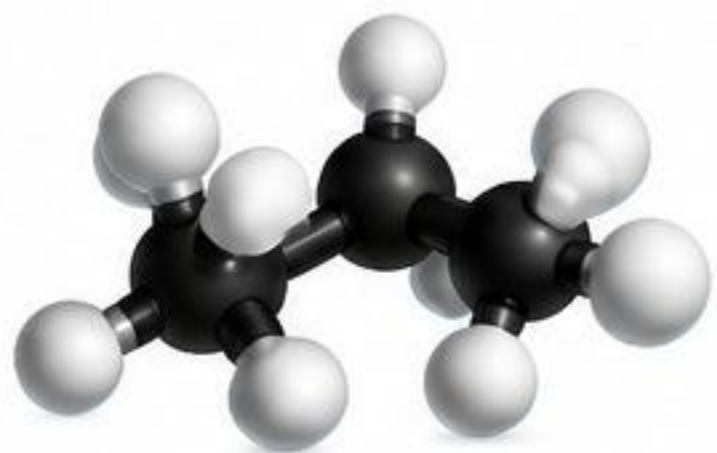
$C_nH_{2n+2} = ?$



Formulani yozishda elementlarning indekslarini to'g'ri qo'yishga e'tibor bering.

*Har bir to'g'ri
javob - yangi bilim!*





Mustahkamlash uchun topshiriqlar

Mavzu: Alkanlar

O'ylang
Yozing
Rivojlaning!

2

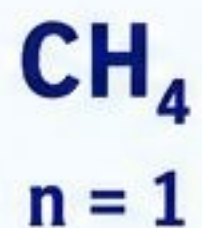
Gomologik zanjirni davom ettiring

Alkanlarning gomologik qatorida har bir keyingi modddan oldingisidan bitta $-\text{CH}_2-$ guruhiga ko'p bo'ladi. Quyidagi qatorni davom ettiring.



Har bir keyingi
modda oldingisidan
 $-\text{CH}_2-$ ga ko'p.

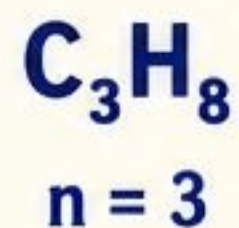
Metan



Etan



Propan



n = 4

n = 5

n = 6

n = 7

1

Qaysi moddalarning nomi yozildi?
(n = 4, 5, 6, 7 uchun nomlarini ham yozing.)

n = 4 — _____

n = 5 — _____

n = 6 — _____

n = 7 — _____

2

Umumiy formulani tekshirib ko'ring:



n = 4 → _____

n = 5 → _____

n = 6 → _____

n = 7 → _____

Kimyo -
hayot bilan
bog'liq!



3

Izomerlarini yozing

Quyida berilgan alkanlarning barcha strukturaviy izomerlarini yozing.
Har bir izomerni nomlang.

Bir formula -
bir necha
modda!

1

 C_4H_{10}

izomerlarini yozing
va nomlang.

1- izomer

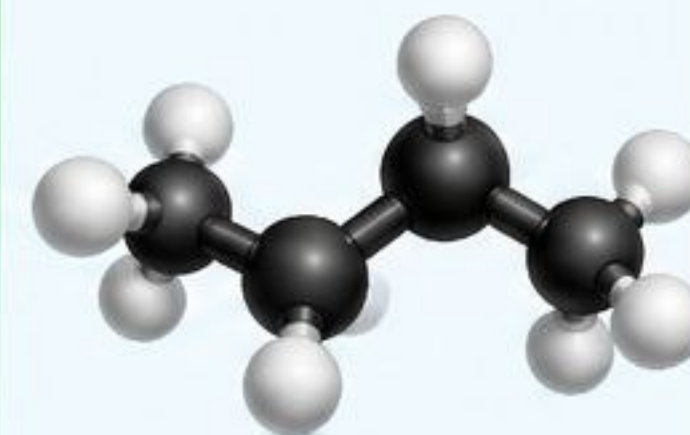
Strukturaviy formula:

Nomi: _____

2- izomer

Strukturaviy formula:

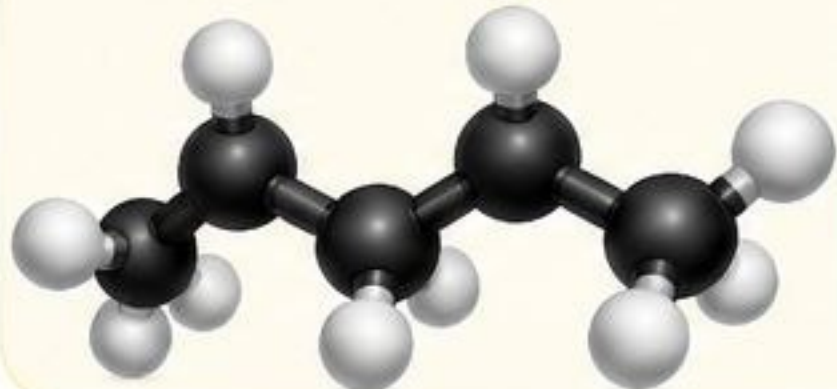
Nomi: _____



2

 C_5H_{12}

izomerlarini yozing
va nomlang.



1- izomer

Strukturaviy formula:

Nomi: _____

2- izomer

Strukturaviy formula:

Nomi: _____

3- izomer

Strukturaviy formula:

Nomi: _____


 C_5H_{12} ning nechta izomeri bor-?



Nega C_4H_{10} dan ko'ra C_5H_{12} ning izomerlari soni ko'proq-?

4 Reaksiyalarni davom ettiring

Berilgan tenglamalarni to'g'ri davom ettiring va hosil bo'ladigan moddalar formulalarini yozing.

Kimyo
fikrli odamlar
uchun!



Eslatma:

Tenglamalarni yozishda moddalar formulalarini to'g'ri va tenglashtirilgan ko'rinishda yozing.



Har bir reaksiya -
hayotdagi imkoniyat!



5

Moslashtiring

Chapdagi moddalarni ularning qo'llanish sohasi bilan moslashtiring.
Har bir moddaga mos raqamni yozing.

Kimyo
hayotimizda
har doim
biz bilan!

Moddalar

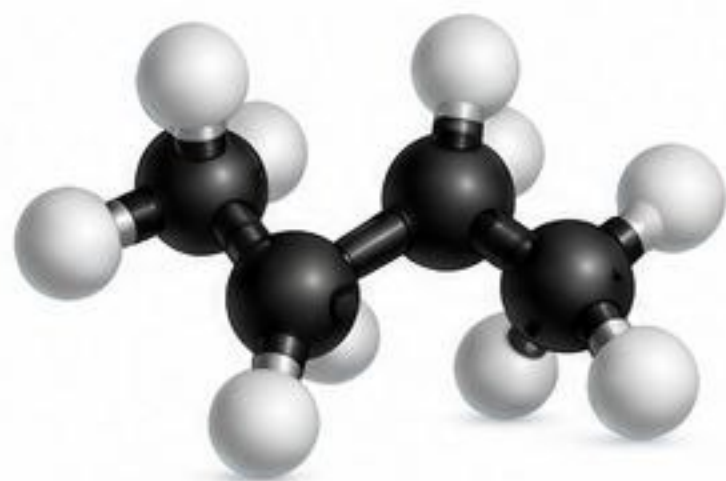
1 Metan CH_4

2 Propan C_3H_8

3 Butan C_4H_{10}

4 Pentan C_5H_{12}

5 Geksan C_6H_{14}



To'g'ri javob
– yangi imkoniyat!

Qo'llanish sohasi

A

Tabiiy gaz tarkibiy qismi,
uy-joylarni isitishda yoqilg'i sifatida
ishlatiladi.



B

Maishiy gaz (gaz plitalari uchun
yoqilg'i), gaz ballonlarda ishlatiladi.



C

Suyuq yoqilg'i fraksiyasi, benzin
tarkibida uchraydi.



D

Erituvchi sifatida (organik sintezda,
lak-bo'yoq sanoatida) ishlatiladi.



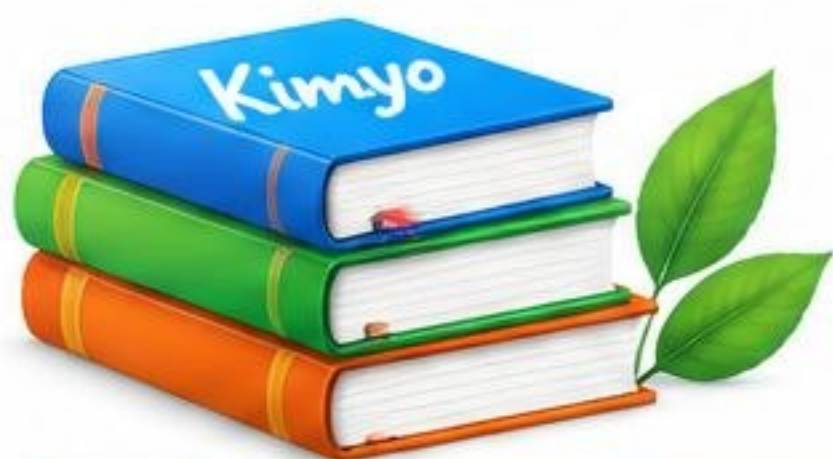
E

Suyuq yoqilg'i fraksiyasi, dizel yoqilg'isi
tarkibida uchraydi.



Moslashtirgandan so'ng, qaysi modda sizning
kundalik hayotingizda ko'proq uchraydi?





UYGA VAZIFA

Bilim
bugungi mehnat
- ertangi
imkoniyat!

1

Nazariy savollar (yozma javob bering)

- 1) Alkanlar nima-?
- 2) Alkanlarning umumiy formulasi qanday-?
- 3) Alkanlarning asosiy kimyoviy xossalari yozing-?
- 4) Alkanlar qayerlarda va qanday sohalarda qo'llaniladi-?

2

Quyidagi moddalar formulalarini yozing

- | | |
|-------------------|-------------------|
| 1) Metan – _____ | 4) Butan – _____ |
| 2) Etan – _____ | 5) Pentan – _____ |
| 3) Propan – _____ | 6) Geksan – _____ |

3

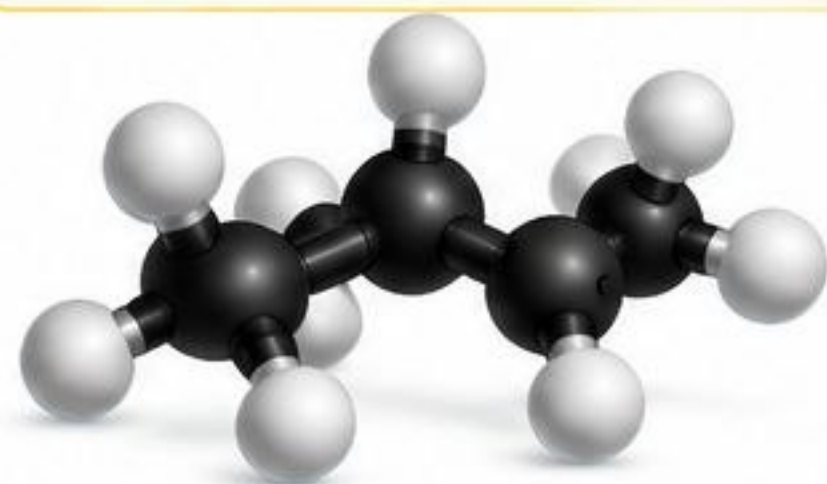
Izomerlarni yozing

- 1) C_4H_{10} ning barcha strukturaviy izomerlarini yozing.
- 2) C_5H_{12} ning barcha strukturaviy izomerlarini yozing.
- 3) C_6H_{14} ning barcha strukturaviy izomerlarini yozing (agar mavjud bo'lsa).

4

Reaksiyalarni davom ettiring

- 1) $CH_4 + 2O_2 \rightarrow \text{_____} + \text{_____}$
- 2) $CH_4 + Cl_2 \xrightarrow{h\nu} \text{_____} + \text{_____}$
- 3) $2CH_3Cl + 2Na \xrightarrow{\text{quruq efir}} \text{_____} + \text{_____}$
- 4) $CH_3COONa + NaOH \xrightarrow{CaO, t^\circ} \text{_____} + \text{_____}$



Bugungi vazifa
- ertangi muvaffaqiyat!



01

MAISHIY MAQSADLARDA



- _____
- _____
- _____
- _____

02

ENERGIYA MANBAI



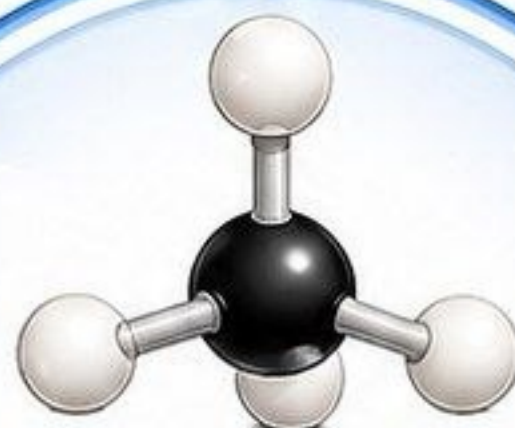
- _____
- _____
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03

SANOATDA ISHLATILISHI



- _____
- _____
- _____
- _____



METAN

 CH_4 

07

BOSHQA SOHALARDA



- _____
- _____
- _____

04

TRANSPORTDA



- _____
- _____
- _____
- _____

06

QURILISHDA



- _____
- _____
- _____
- _____

05

KIMYO SANOATIDA



- _____
- _____
- _____
- _____

XULOSA:



01 MAISHIY MAQSADLARDA



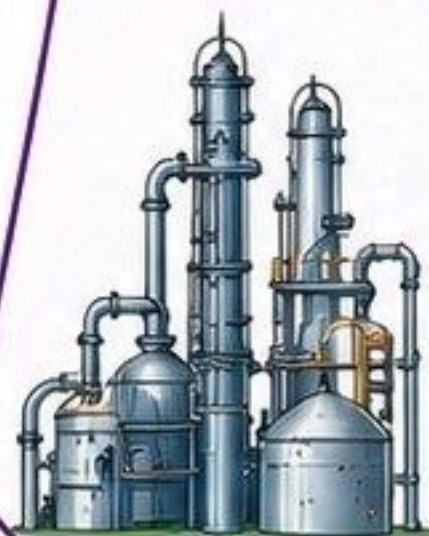
- _____
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02 ENERGIYA MANBAI



- _____
- _____
- _____
- _____

03 SANOATDA ISHLATILISHI

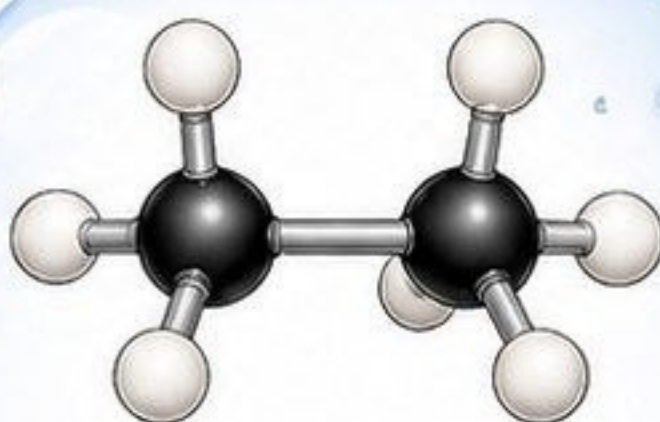


- _____
- _____
- _____
- _____

07 BOSHQA SOHALARDA



- _____
- _____
- _____
- _____



ETAN
 C_2H_6

04 TRANSPORTDA



- _____
- _____
- _____
- _____

06 QURILISHDA



- _____
- _____
- _____
- _____

05 KIMYO SANOATIDA



- _____
- _____
- _____
- _____

XULOSA: _____



01 MAISHIY MAQSADLARDA



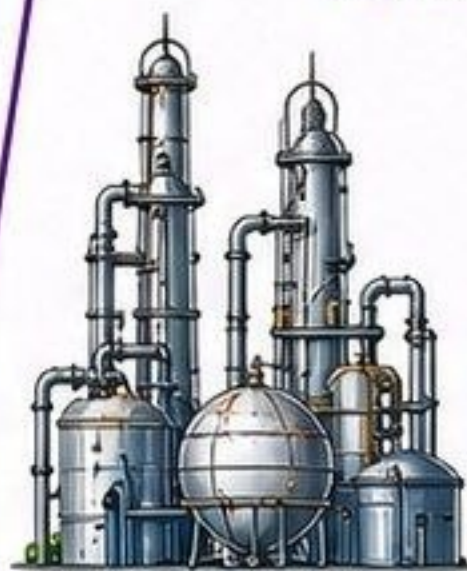
- _____
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02 ENERGIYA MANBAI



- _____
- _____
- _____
- _____

03 SANOATDA ISHLATILISHI

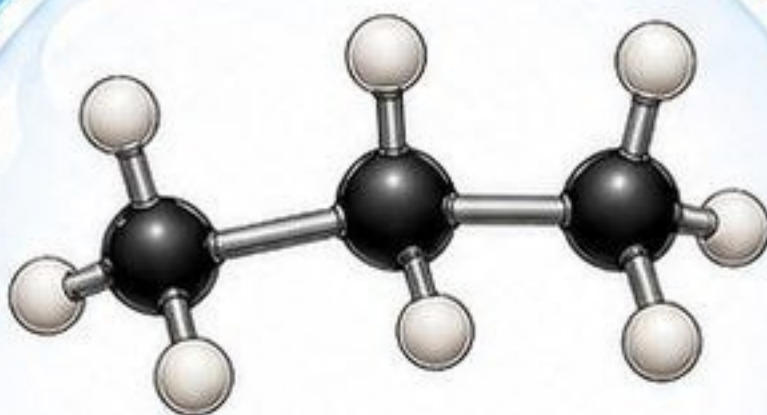


- _____
- _____
- _____
- _____

07 BOSHQA SOHALARDA



- _____
- _____
- _____
- _____
- _____
- _____



PROPAN
 C_3H_8

04 TRANSPORTDA



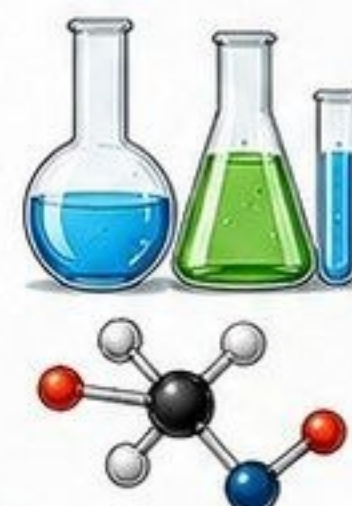
- _____
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06 QURILISHDA



- _____
- _____
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- _____

05 KIMYO SANOATIDA



- _____
- _____
- _____
- _____

XULOSA: _____



01 MAISHIY MAQSADLARDA



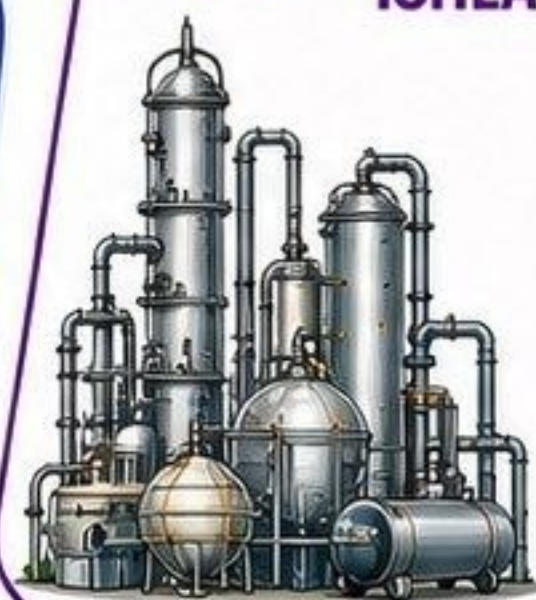
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02 ENERGIYA MANBAI



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03 SANOATDA ISHLATILISHI

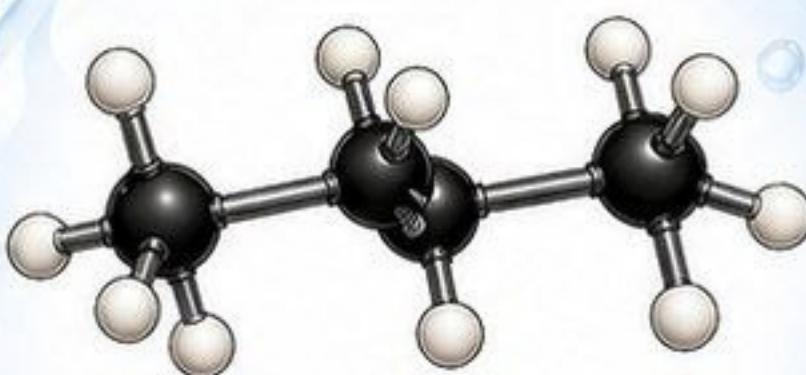


- _____
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- _____
- _____

07 BOSHQA SOHALARDA



- _____
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- _____
- _____
- _____
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BUTAN
 C_4H_{10}

04 TRANSPORTDA



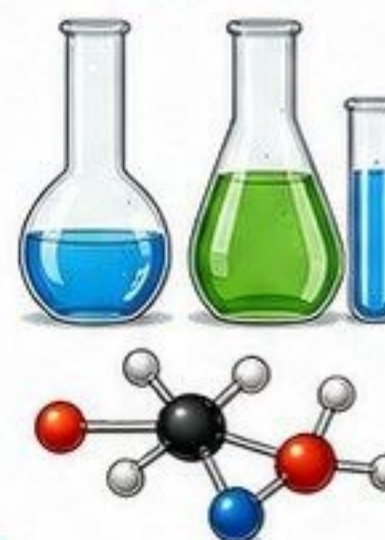
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06 QURILISHDA



- _____
- _____
- _____
- _____
- _____

05 KIMYO SANOATIDA

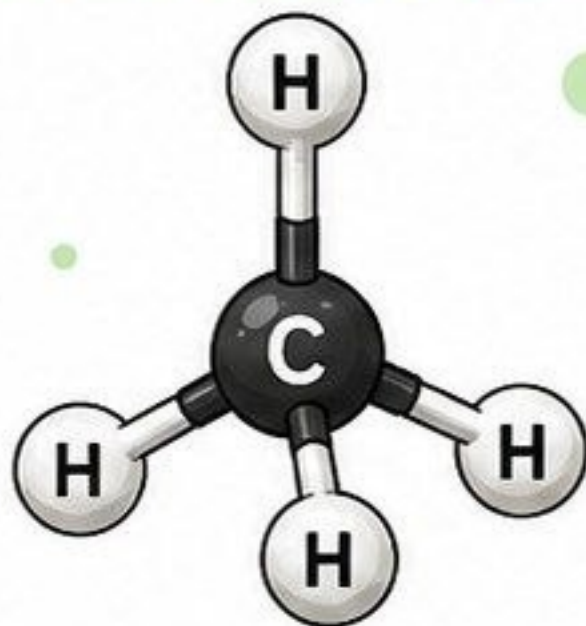
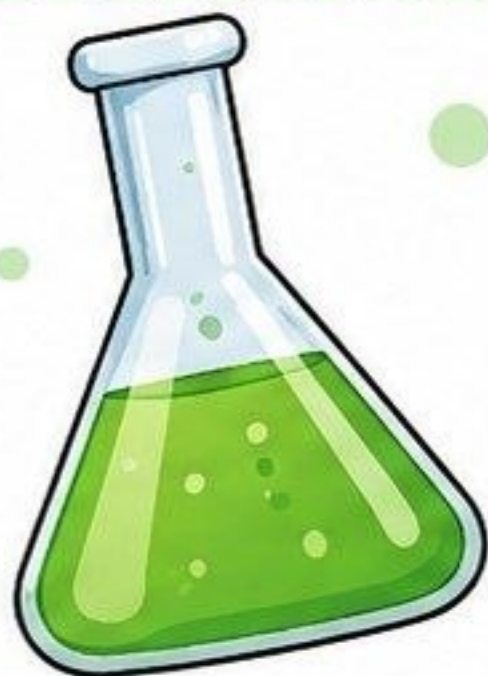


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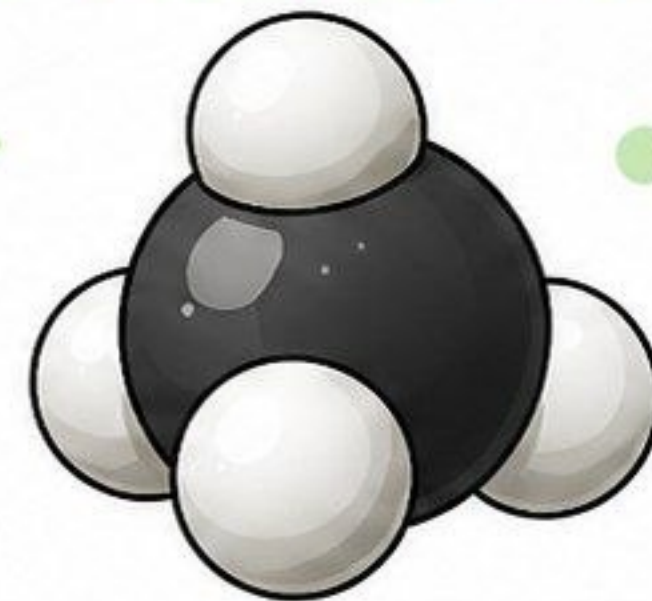
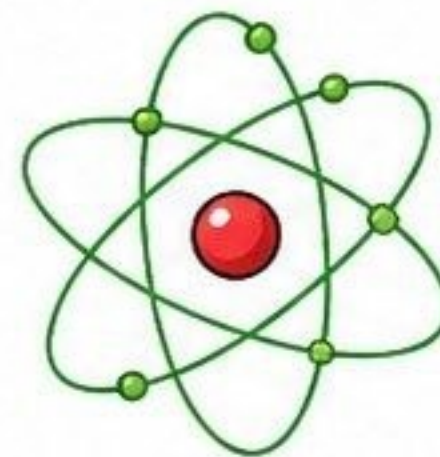


XULOSA: _____





METAN (METAN)



1. TARKIBI

C – _____

H – _____

NISBIY MOLEKULAR MASSA (Mr): _____

2. FIZIK XOSSALARI

3. KIMYOVIY XOSSALARI

- _____
- _____
- _____
- _____

4. OLINISHI

- _____
- _____
- _____
- _____

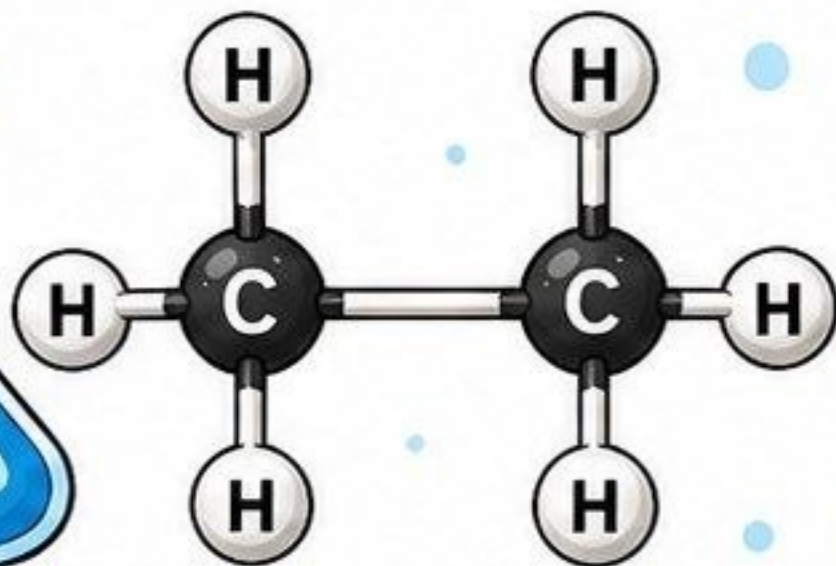
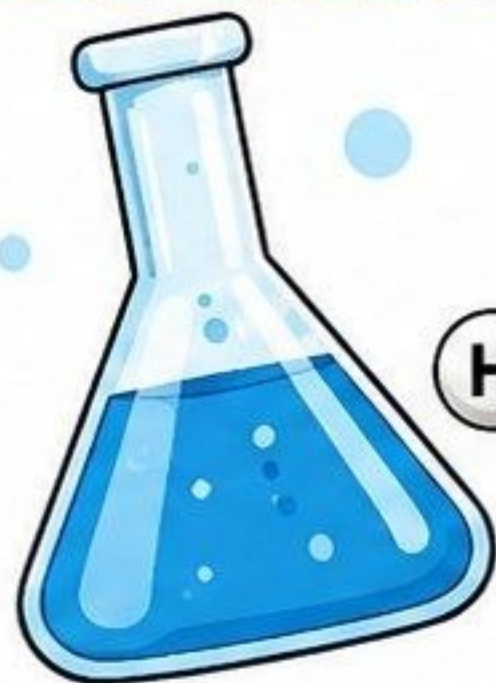
5. ISHLATILISHI

- _____
- _____
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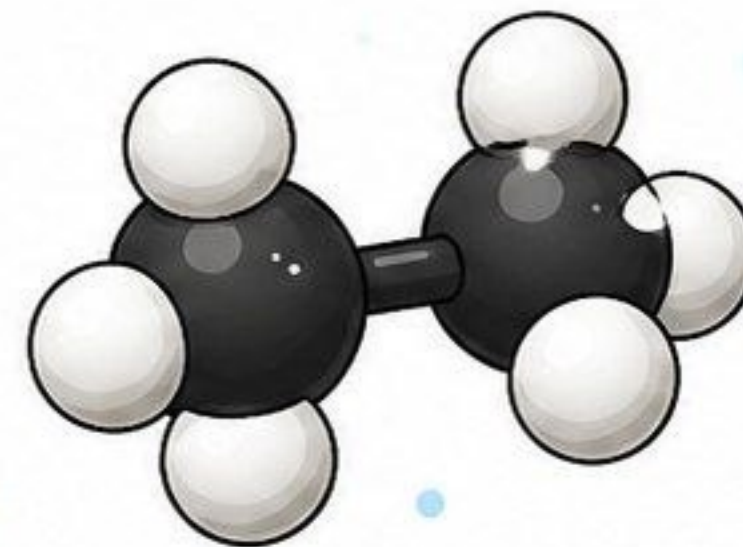
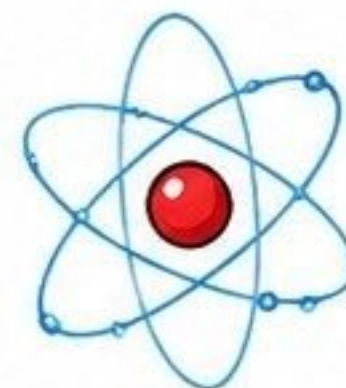
6. TABIATDA UCHRASHI

7. QIZIQARLI MA'LUMOT





ETAN (ETAN)



1. TARKIBI

C – _____

H – _____

NISBIY MOLEKULAR MASSA (Mr): _____

2. FIZIK XOSSALARI

3. KIMYOVIY XOSSALARI

- _____
- _____
- _____
- _____

4. OLINISHI

- _____
- _____
- _____
- _____

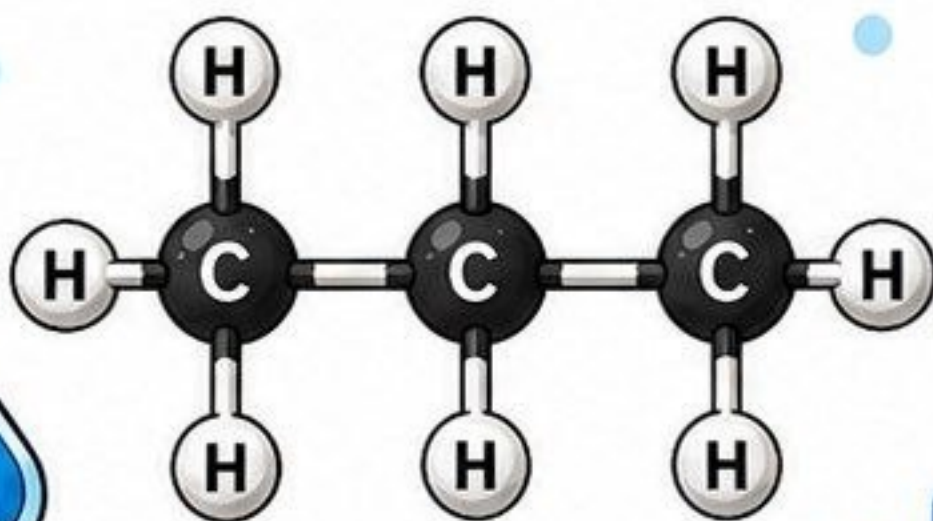
5. ISHLATILISHI

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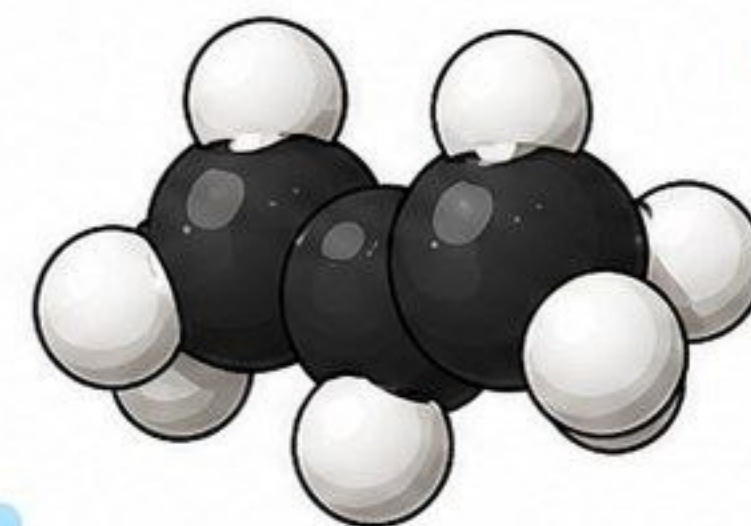
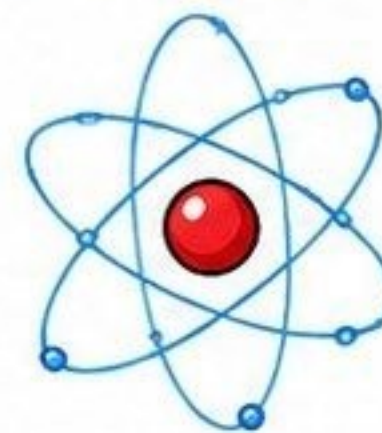
6. TABIATDA UCHRASHI

7. QIZIQARLI MA'LUMOT





PROPAN (PROPAN)



1. TARKIBI

C – _____

H – _____

NISBIY MOLEKULAR MASSA (Mr): _____

2. FIZIK XOSSALARI

3. KIMYOVIY XOSSALARI

- _____
- _____
- _____
- _____

4. OLINISHI

- _____
- _____
- _____
- _____

5. ISHLATILISHI

- _____
- _____
- _____
- _____

6. TABIATDA UCHRASHI

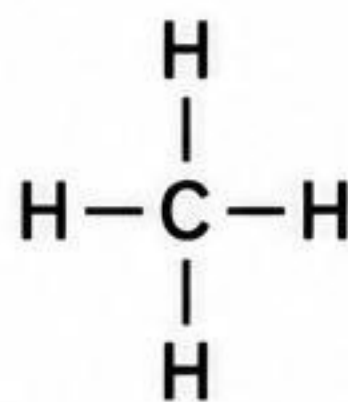
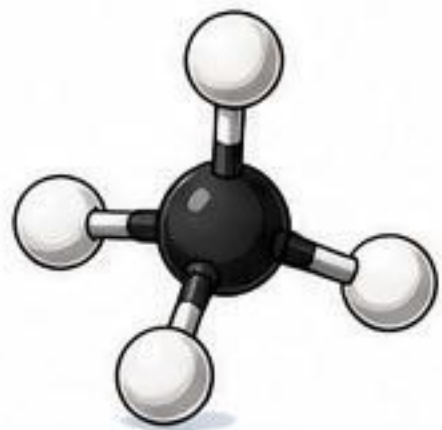
7. QIZIQARLI MA'LUMOT



Mavzu: _____

Sinf: _____

Sana: _____



T-CHART

METAN

CH₄



FOYDALI TOMONLARI



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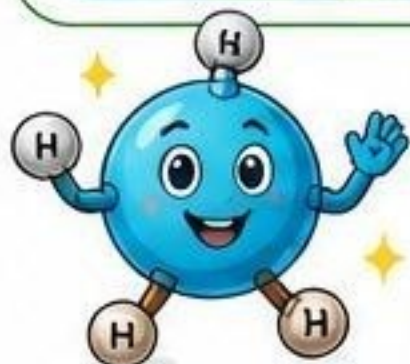
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Metan (CH₄)
tabiatda mavjud bo'lgan
muhim gaz bo'lib, undan
ko'p sohalarda foydalaniladi!



ZARARLI TOMONLARI



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Yonuvchan gaz



Tabiatda mavjud



Kimyo sanoatida
xom ashyo



Energiya manbai

METAN – CH₄



ESLATMA!

Metan atmosferada to'planib,
global isishga sabab bo'ladi!



T-JADVAL: PROPAN GAZ

PROPAN GAZNING FOYDALI VA ZARARLI TOMONLARINI TAQQOSLASH

PROPAN GAZNING FOYDALI TOMONLARI

T

PROPAN GAZNING ZARARLI TOMONLARI



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- ✓
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- ✓
- ✓

MISOLLAR



- ✓
- ✓
- ✓
- ✓
- ✓
- ✓



MISOLLAR

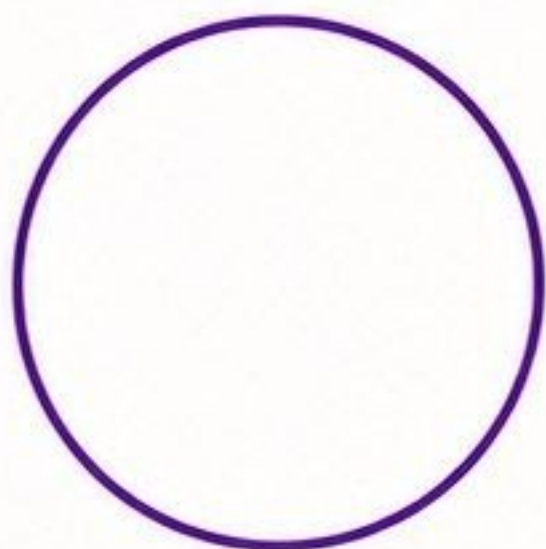
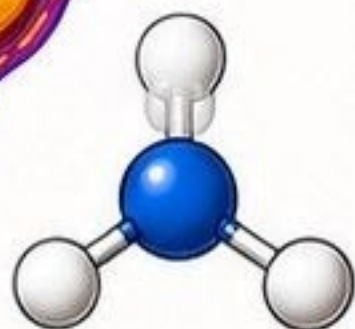


XULOSA:



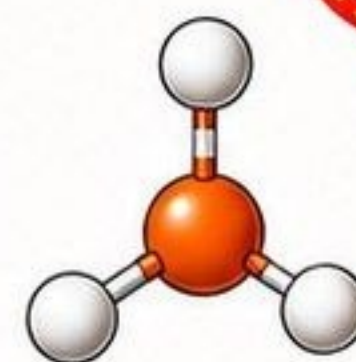
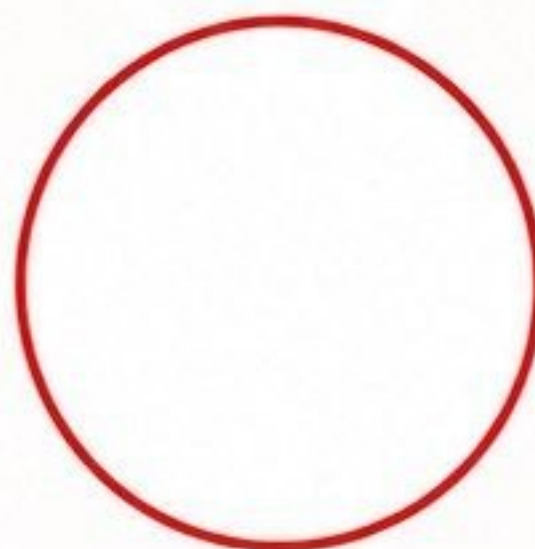
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Ammiak



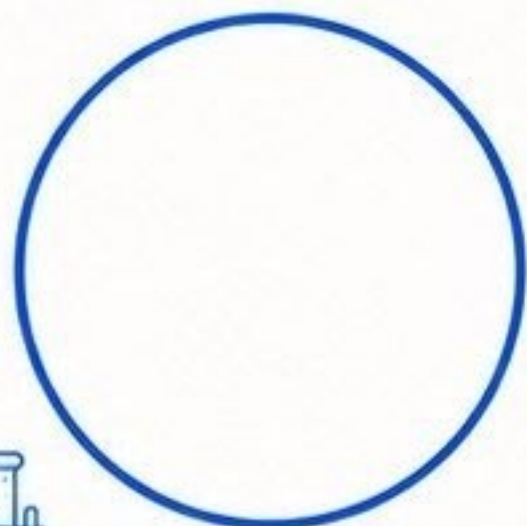
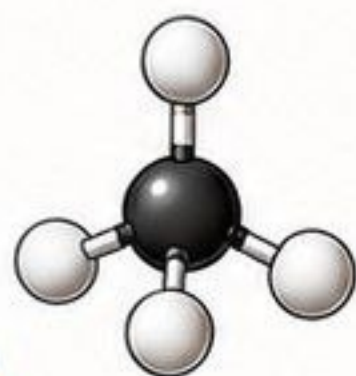
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Fosfin



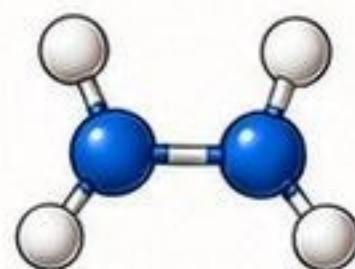
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Metan



4

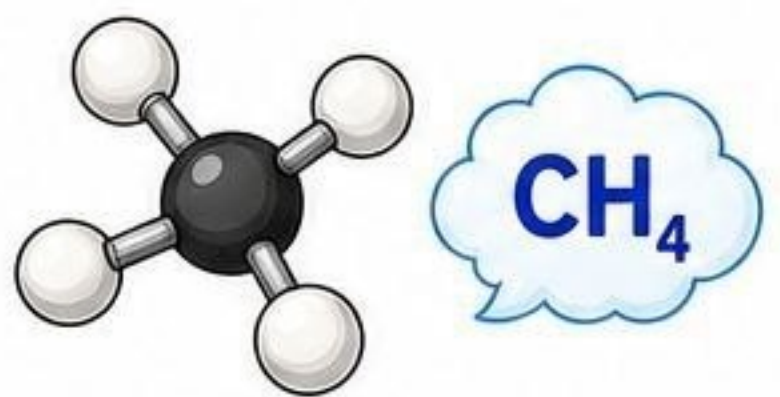
Gidrazin



Mavzu: _____

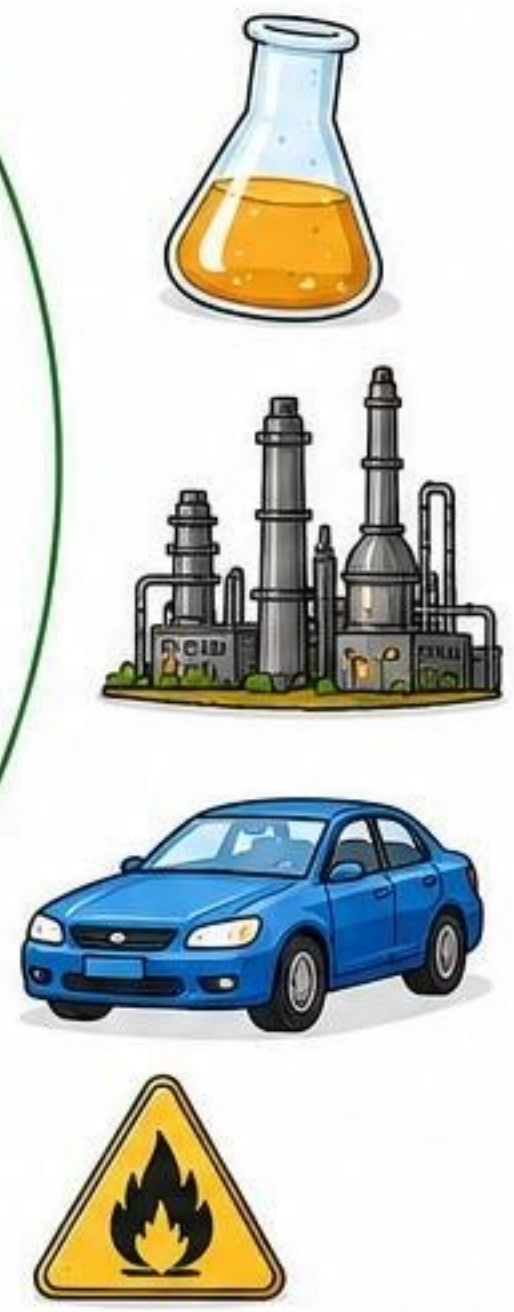
Sinf: _____ Sana: _____

VEN DIAGRAMMA



METAN

BENZIN



METAN

BENZIN

IKKALASIGA XOS

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XULOSA:

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