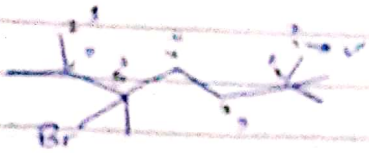


5-bromo-2,2,5-trimethyl heptane

* Alkyle hydrogens B-

common

CH_3Cl :- methyl chloride

→ 1-Bromo-hexane → IUPAC name

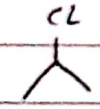
→ n-hexyle bromid → common name

normal (عادي)

→ n-propyle chloride → common name

↳ when the normal interaction

* we can't use number in common name

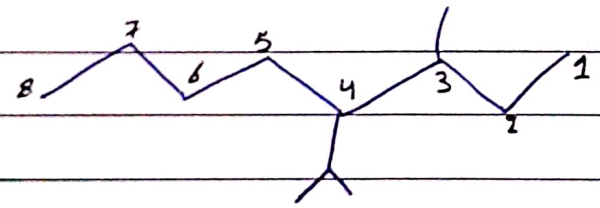


→ iso propyl chloride

$CH_3-\underset{Cl}{CH}-CH_3$

↳ when the center interaction

↳ without "-"



4-isopropyle-3-methyl octane "name accepted by "IUPAC"

or 3-methyl-4-(methyl ethyl) octan

ترتيب بناء أعلى ها

حرف (m) ولين (e)

نفضل بترتيب الحروف → iso

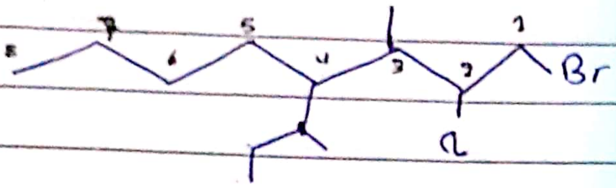
n- & sec- & tert- ↓

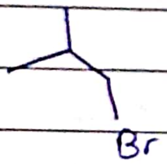
لا يرحنو بترتيب الحروف

* 

sec-butyle bromide ⇐ لا ترتيب تحت ال d

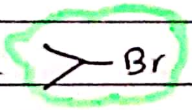
لا ترتيب حسب الاحرف — رابط على ذرة كربون الثانية d

* 

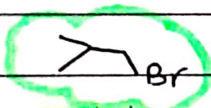
* 

→ $CH_3-CH(CH_3)-CH_2Br$

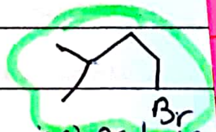
iso butyle

* 

iso propyle —



isobutyle —

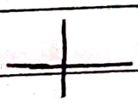


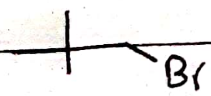
iso pentyle

* C – C(C)(C) – Br → tert – butyle bromide

* C – C(C) – C(Br) → iso butyle bromide

C – C – C – C
↑ sec– n–
لا يدخل بترتيب الاحرف

*  → Neopetane or 2,2 -dimythyle propane

* 

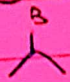
→ Neo pentylbromide

---

* تلخيص بسيط لتسمية common B

1) الرابط على الطرف سواء ٣ ذرات كربون أو ٤ في سلسلة غير متفرعة مثل
R⁀⁀ or ⁀R
C-C-C-C-B
يكون الاسم
n – Alkyl (B)

٢) الرابط على الوسط في حال ٣ ذرات كربون
الاسم بيكون
iso Alkyl (B)



٣) الرابط على الذرة الثانية في حالة ٤ ذرات كربون و سلسلة غير متفرعة
C – C – C(B) – C
sec – Alkyl B

٤) الرابط على ذرة الكربون الوسط في ٤ ذرات كربون و سلسلة متفرعة
C – C(B)(C) – C
tert – Alkyl B

٥) رابط على الطرف في ٤ ذرات C و سلسلة متفرعة
C – C(C) – C – Br
iso Alkyl B

Scanned by CamScanner

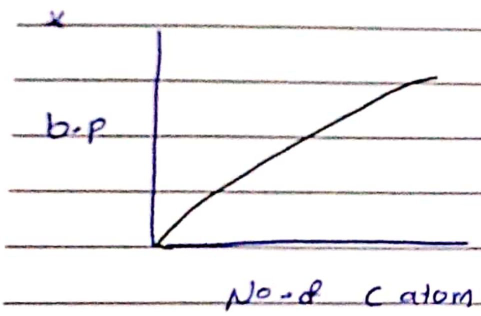
* 2.7 : physical properties * 2.6 → Reading
↳ depend on interaction force

الأسس

1* Inter molecular forces :

1- London → non polar [Alkanes / Ether]
2- Dipole – Dipole → polar [Aldhyd / Ketone / Ester]
3- Hydrogene bond → H + (N, O, F) [ALcohol]

2* London F ↑ ∝ molar mass ↑ so → bonding melting point ↑
↳ no. of carbon ↑ → B.p ↑



على الأولوية 3←1

3* For constitentional isomers → branching ↑ → B.P ↓
C_5H_{12} same M. mass * No of C ↑ → b.p ↑

Long chain → area ↑ → b.p ↑ short chain → area ↓ → b.p ↓

* $C_nH_{2n+2}O$ دالة المركبات التي تحتوي (O) فإن المركب الذي يمتلك أعلى درجة غليان
يكون إيثر (O-R) ، وأقل درجة غليان يكون كحول (R-OH) وأقل تفرع

* إذا طلب أقل درجة غليان لـ isomers لمركب ما مثل (pentane C_5H_{12}) : نبحث عن الأكثر تفرع

$$CH_3-\underset{CH_3}{\overset{CH_3}{C}}-CH_3$$

Five Apple

* Carbon is makes single covalent bond → Rotation

*  → lowered space so can repulsion each other

↳ "conformer" is more stable structure highly space between first C and last C

* I and II same compound but C-C → Rotation

" Rotational or Conformational isomers "

: Conformation of alkanes

$CH_3 - CH_3$

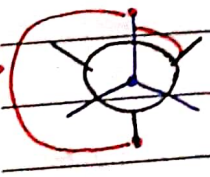
* newman projection

↳ make projection along C-C bond

 → C-C "single Bond"

 → H-C "120°" → projection angle but 109.5 Real angle

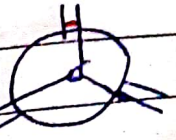
↳ زاوية

 → H-C-C-H (staggend conformation)

↳ more stable

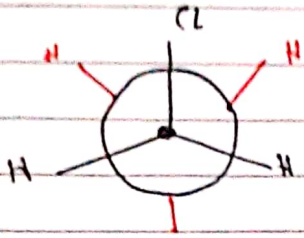
↳ زاوية

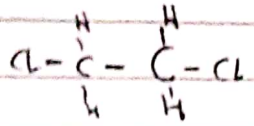
θ → Dihedral angle → 60°

 θ = 0° "Dihedral angle" (edipsed conf)

* Draw 1,2-di Chloro ethan
most stable and least stable "Newon conformation"

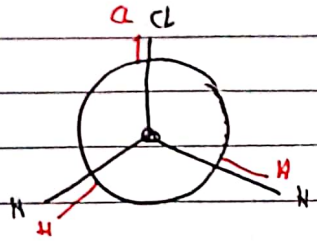
Staggered →





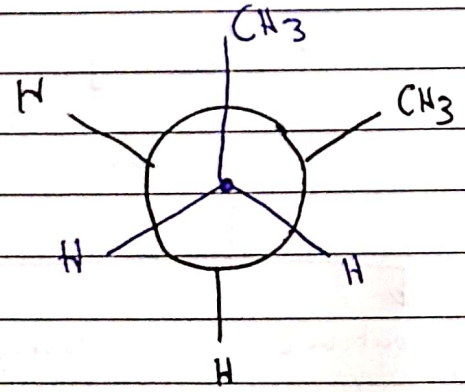
Cl → most stable → Cl ↔ أبعد ما يمكن عن → 180°
"anti for each other"

eclipsed →

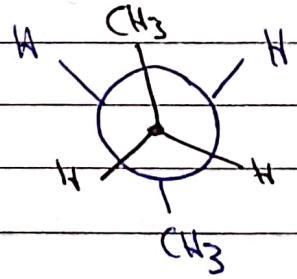


* write the structure, Naming, Relation I, II

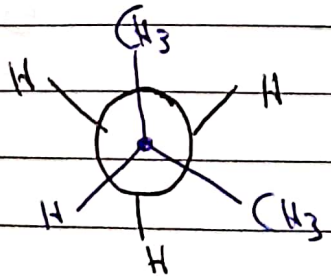
I, II



(I)

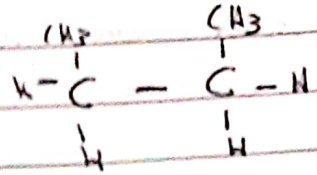
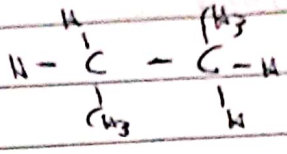
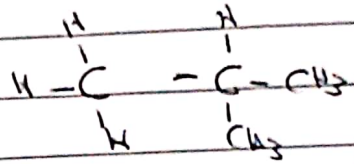


(II)



(III)

Five Apple

	Naming	structure
I	butane	
II	butane	
III	2-methyl propane	

II , I → are conformational isomer

I , III → are contitutional isomer

isomer : same compound but diff structure

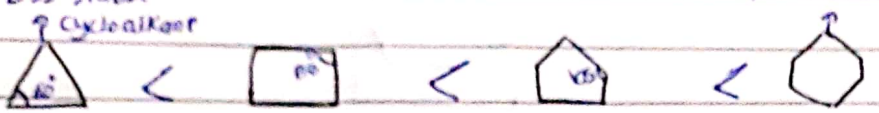
- different bonding
  - Constitutional "structural"
- same bonding
  - diff orientation of bonds in space
    - Conformutional
      - same compound and diff structure by Rotation
    - Configrational
      - cycloalkanes [الكين]

* كيفية التفريق بين الاشكال (new man):
  - اذا اختلفت نقاط الاتصال ← constitutional isomers
  - اذا تشابهت من حيث نقاط الاتصال و اختلفت من حيث الدوران ← conformational isomers

2.9 :- Cyclo Alkanes naming and conformation

General Form → C_nH_{2n}

less stable Cycloalkane

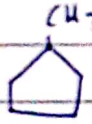


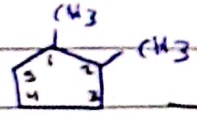
more stable cyclo Alkane

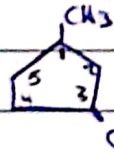
-cyclopropane- -cyclobutane- -cyclopentane- -cyclohexane-

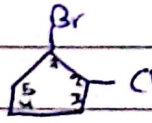
* The main difference between Long chain and cyclo chain is the angle

* E.G :-

2)  → methyl cyclopentane

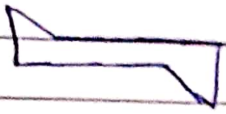
2)  → 1,2-dimethyl cyclopentane

3)  → 1,3- dimethyl cyclo pentane

4)  → 1-bromo-2-methyl cyclo pentane

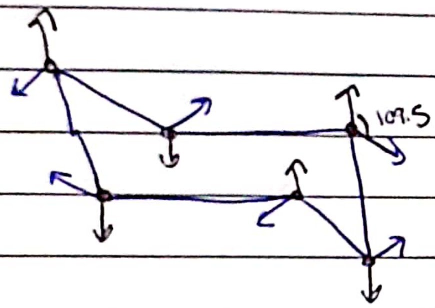
* Cyclo hexane :-

→ conformation of cyclo hexane :-



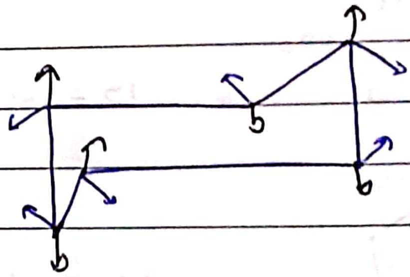
Chair
* more stable
* All bond are staggered

Boat
* less stable
* 2 bonds are eclipsed

* 

↑ → axial (a)
↑ → equatorial (e)
] متعاكستان، الزاوية بينهم 109.5 على نفس ذرة كربون

flibing
⇌
equilibrium



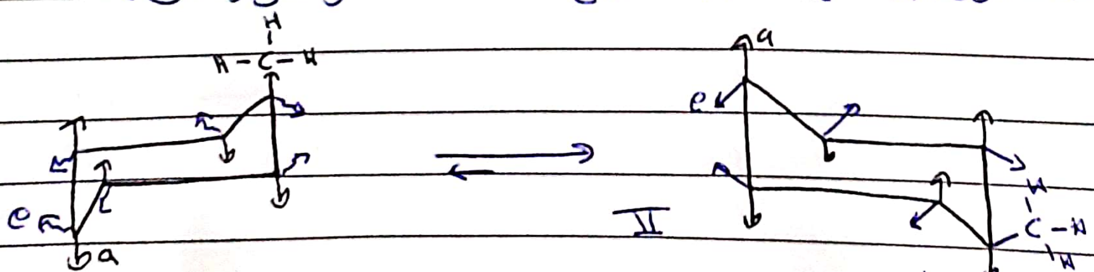
* 6 equatorial H-atom < 3 down, 3 up

* 6 Axial H-atom < 3 down, 3 up

* e تتحول لـ a *

* a تتحول لـ e *

* عند وجود تفرع (مجموعة) فإننا نضعها على موقع e ... لأنه أكثر استقرار مثل :-



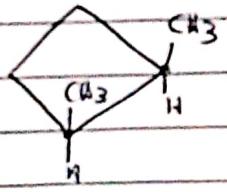
more stable

I : the interaction between H-atom in carbon number three and H-atom around th branch carbon is 1,3 -diAxiaL

2.10 * cis-trans isomerism

* If the two connected group in the cycle in the same direction (up-up) or (down-down) we called it -Cis-
* If the two connected group in the cycle in opposite direction (up-down) we called it -trans-

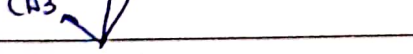
* E.g:-



→ cis-1,2-dimethyl cyclobutane

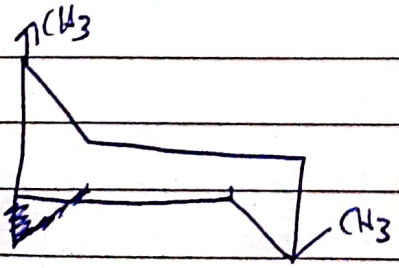
→ trans-2-bromo-3-methyl cyclopentane

*



→ cis-1,4-dimethyl cyclohexane

Flibing
↳ * cis → cis

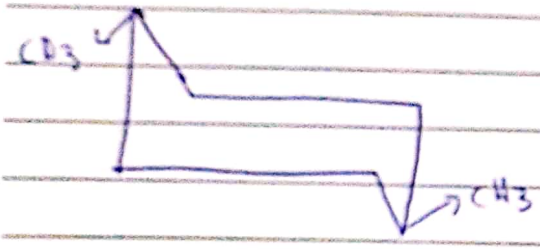


→ cis-1,4-dimethyl cyclohexane

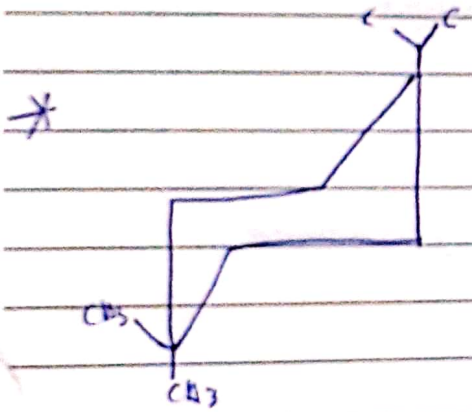
* These two structures are in the same stability because have in each state one equitorial group and one axial group

→ trans-1,4-dimethyl cyclohexane

↓ Flipping

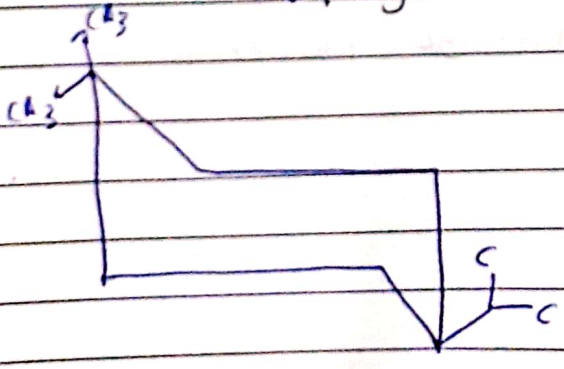


→ this structure is more stable



→ trans-1-isopropyl-4-methyl cyclohexane

↑↓ flipping

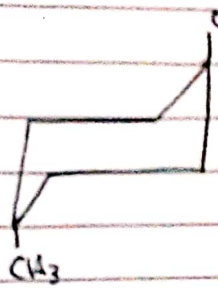


→ cis-1-isopropyl-4-methyl cyclohexane

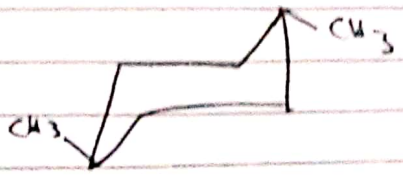
* this stater is more stable

* what is the Relation between each pair of ~~me~~ compound?

1)

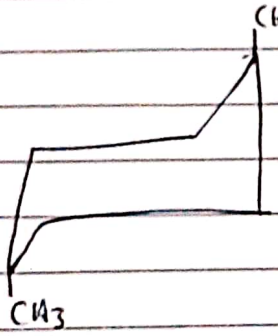


6

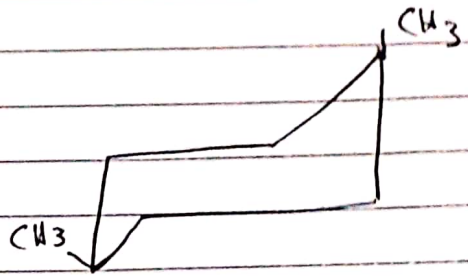


"conformers"

2)

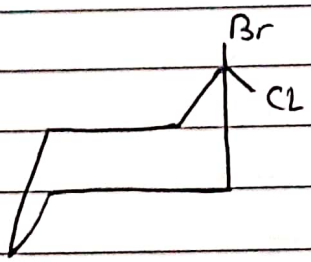


6

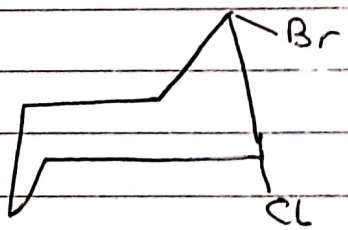


"configurational"

3)



6



"constitutisonal"

1* نقارن من حيث نقاط الاتصال اذا اختلفت ← constitutional

2* اذا تشابهت واختلف cis، trans ← configuration

3* اذا تشابهت ولكن اختلف من حيث g او e ← conformation