Problem 4-1-1)

IUPAC names.

(a)

① Find the parents or long chains.

Carbon is six.

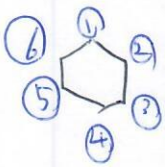
Cyclohexane.

② Find the substituents.

CH_3- , CH_3-.

The long ~~chains~~ chain has two substituents.

③ Give the number.

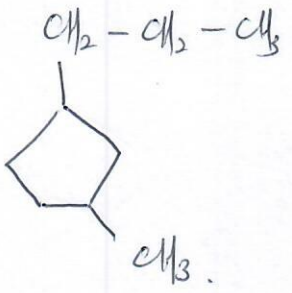


④ Find the functional groups ⇒ No.

The name of molecule is

1. 4 - Dimethyl cyclohexane.

problem 4-1-2

(b) 

① Find the parents.

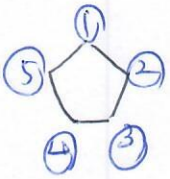
cyclopentane

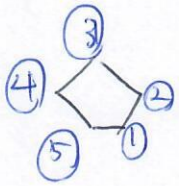
② Find the substituents.

$CH_3-CH_2-CH_2-$, CH_3-

(propyl) (methyl).

③ Give the number.





The name of molecule is

1-propyl-3-methylcyclopentane

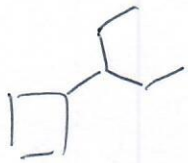
or 1-methy-3-propylcyclopentane.

Considered alphebetical ~~priority~~ priority

1-methyl-3-propylcyclopentane.

Problem 4-1-3

(c)



① Find the parents.

 Carbon is 4. cyclobutane.

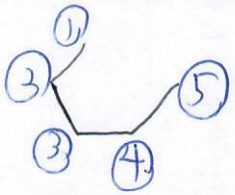
 Carbon is 5. pentane.

The parent is pentane.

② Find the substituents.

 : cyclobutane → cyclobutyl.

③ Give the ~~name~~ number.

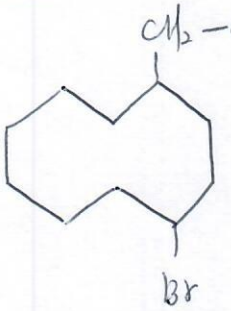


The name of molecule is

3-cyclobutyl pentane.

Problem 4-1-4

(d)



① Find the long chains. or parents.

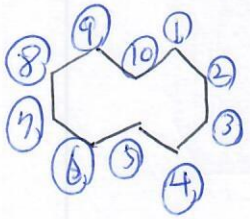
Carbon is 10. cyclodecane.

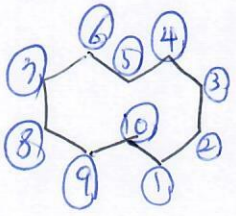
② Find the substituents.

CH_3-CH_2- ; ethyl

Br- ; bromo.

③ Give the number.





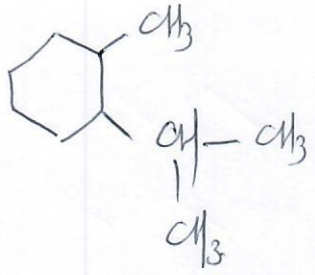
Considered the alphabetic priority.

the name of molecule is

1-Bromo-4-ethylcyclodecane.

Problem 4-1-5

(e)



① Find the parents.

 cyclohexane.

② Find the substituents

CH_3- ; methyl

$CH_3-CH(CH_3)-$; Isopropyl.

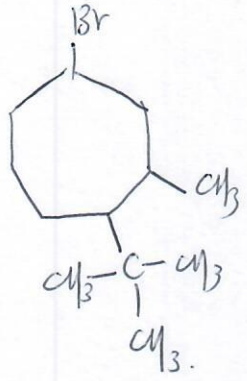
③ Give the number. and consider the alphabetic priority

The name of molecule is

1- Isopropyl - 2- methyl cyclohexane.

Problem 4-1-6

(f)



① Find the parents.

Carbon is 7. Cyclo heptane.

② Find the substituents.

Br- Bromo.

CH_3- methyl

$CH_3-\underset{\underset{CH_3}{|}}{C}-CH_3$ tert-butyl.

③ Give the number and consider the alphabetic priority.

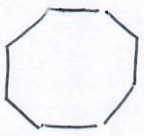
The name of molecule is

4-Bromo-1-tert-butyl-2-methyl cycloheptane.

Problem 4-2

(a) 1,1 – Dimethylcyclooctane.

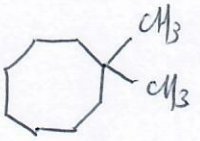
The "cyclooctane" is parent and the structure is



The "methyl" is CH_3-

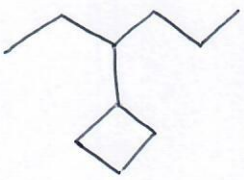
"Di" means "2"

So the structure is



(b) 3 – Cyclobutyl hexane.

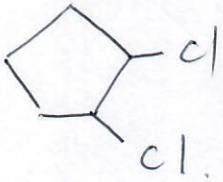
position substituent. parent



Problem 4-2-2

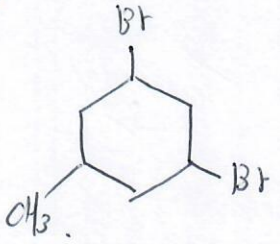
(c) 1,2- di chloro cyclopentane.

postfix — prefix — substituent — parent



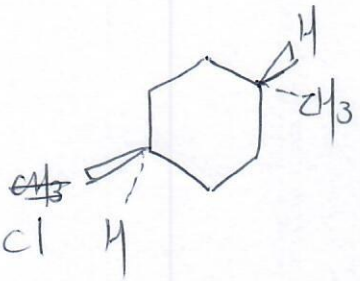
(d) 1,3- Di bromo 5- methyl cyclohexane

postfix — prefix — substituent — substituent — parent



Problem 4-4-1

(a)



① Find the parents 

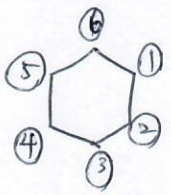
② Find the substuents CH_3- , ~~CH_3~~ $Cl-$

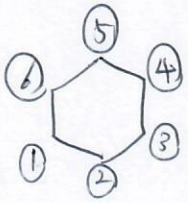
③ Have stereoisomers

"Cl / ~~CH_3~~" is "top" face.

"CH_3-" is "bottom" face.) "trans"

④ Give the number



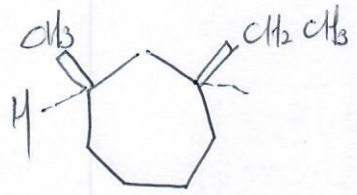


Consider the alphabetical priority.

The name of molecule is.

trans-1-chloro-4-methylcyclohexane.

Problem 4-4-2.

(b) 

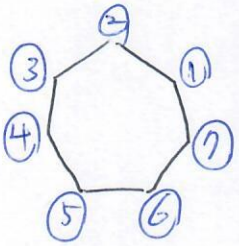
① Find the parents 

② Find the substituents CH_3-, CH_3CH_2-

③ Have stereo isomers

"CH_3-" is "top" face.
"CH_3-CH_2-" is "bottom" face) "cis"

④ Give the number.

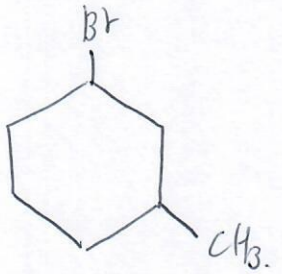


cis-1-Ethyl-3-methylcycloheptane.

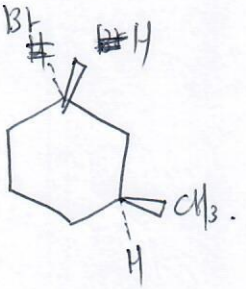
Problem 4-5-1

(a) trans-(1-Bromo-3-)methylcyclohexane.

trans — stereoisomer. 1-Bromo-3-methyl — substituents (positions). cyclohexane — parent.



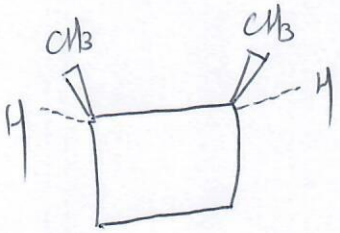
⇓ stereoisomer.



(b) cis-(1,2-)Dimethylcyclobutane

positions

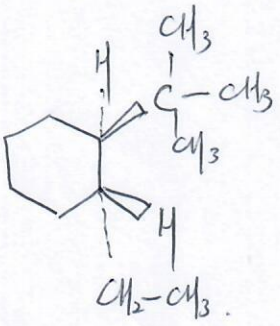
cis — stereoisomer. 1,2-Dimethyl — prefix substituent. cyclobutane — parent.



Problem 4-5-2

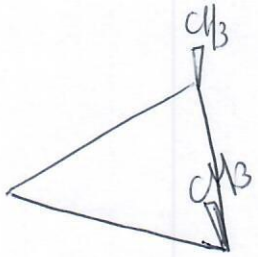
(c) trans-(1)-tert-Butyl-(2)-ethylcyclohexane.

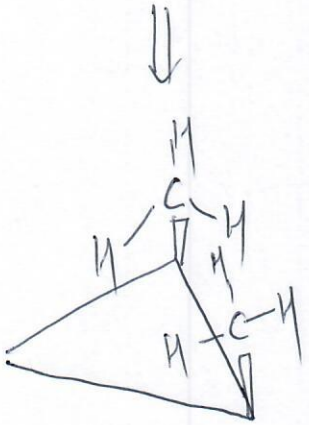
stereoisomer. position Substituents parent.



problem 4-9

cis-1,2-Dimethylcyclopropane





has the steric hindrance

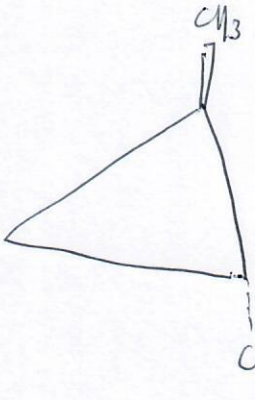
⇓

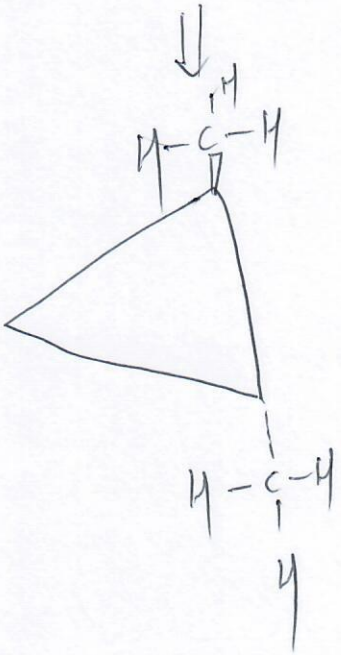
Needs the high E

⇓

Unstable

trans-1,2-Dimethylcyclopropane





no steric hindrance.

⇓

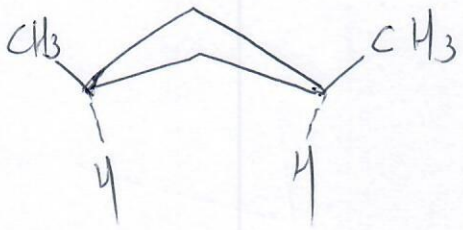
Need the low E.

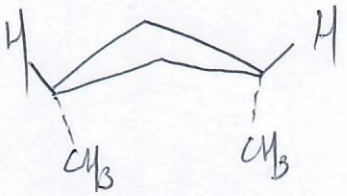
⇓

Stable.

Problem 4-11

cis-1,3-Dimethylcyclo~~hex~~butane has two conformation.





The distance between methyl is long

⇓

low E

⇓

stable

The distance between methyl is close.

⇓

high E

⇓

unstable.