LeAP: Cycloalkanes

- Due Sep 12, 2024 at 11:59pm
- Points 5
- Questions 8
- Available until Sep 16, 2024 at 11:59pm
- Time Limit None
- Allowed Attempts 2

Instructions

Lecture Application Practices (LeAPs) serve as initial opportunities for students to apply the information they've gathered from the pre-lecture videos and in-person lectures/lecture videos.

Students are strongly encouraged to complete LeAPs on the same day that the corresponding topic is completed in class. However, to provide consistent due dates, sets of LeAPs will be due on Thursdays at 11:59 PM - Chicago time. See the Weekly Schedules or Course Calendar for specific due dates for each activity.

Each LeAP is worth 5 points. Credit will be awarded based on accuracy. There is no time limit. Students will receive two attempts for each assignment and the highest score will be recorded in the gradebook. LeAPs may consist of multiple-choice, calculation, ranking, choose all that apply, and fill in the blank type questions.

This quiz was locked Sep 16, 2024 at 11:59pm.

Attempt History

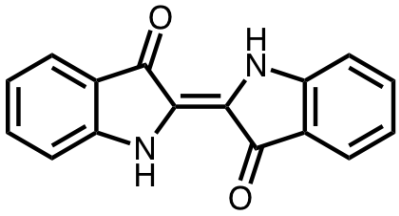
	Attempt	Time	Score
LATEST	Attempt 1	20 minutes	5 out of 5

ⓘ Correct answers are hidden.

Score for this attempt: 5 out of 5
Submitted Sep 7, 2024 at 2:05pm
This attempt took 20 minutes.

Question 1
0.5 / 0.5 pts

Indigo is used as a dye for textiles. Recall what the degree of unsaturation corresponds to. Then, determine the degree of unsaturation of this molecule by analyzing its structure or through calculation and enter the value in the box.



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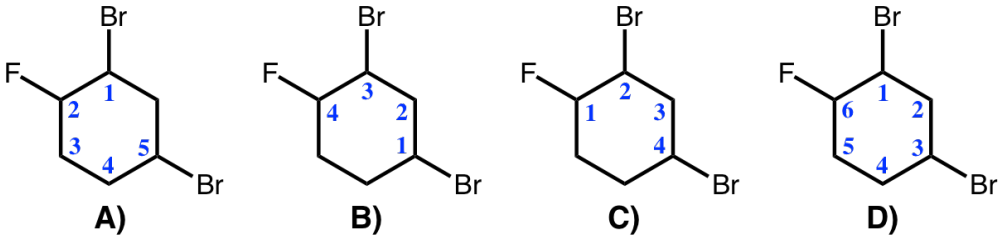
Question 2
0.5 / 0.5 pts

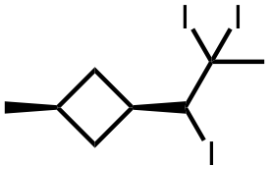
What is the lowest digit numbering scheme that should be used to name the molecule shown below?



- A
- B
- C
- D

Question 3
0.5 / 0.5 pts

What is the name for the molecule labeled as Structure C?



Structure C

- cis-3-(1,2,2-triiodopropyl)-1-methylcyclobutane
- trans-3-(1,2,2-triiodopropyl)-1-methylcyclobutane
- trans-1-methyl-3-(1,2,2-triiodopropyl)cyclobutane
- cis-1-methyl-3-(1,2,2-triiodopropyl)cyclobutane

Question 4

0.5 / 0.5 pts

What type(s) of ring strain are present in Structure C. **Choose all that apply.**

- [x] Angle strain
- [ ] Isomer strain
- [ ] Transannular strain
- [x] Torsional strain

Question 5

0.5 / 0.5 pts

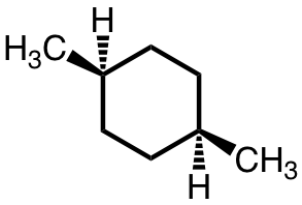
How do the positions of axial and equatorial substituents on a cyclohexane ring change during a chair interconversion?

- (•) Axial and equatorial substituents exchange places.
- ( ) Axial substituents above the ring switch places with axial substituents below the ring.
- ( ) Equatorial substituents move one carbon to the right but remain equatorial.
- ( ) Substituents on the ring do not move during a chair interconversion.

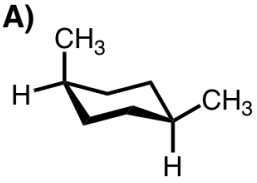
Question 6

1 / 1 pts

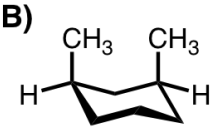
Which chair conformation matches the Lewis structure shown below?



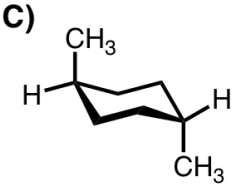
A)



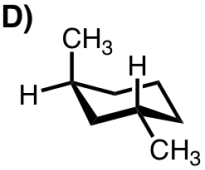
B)



C)



D)

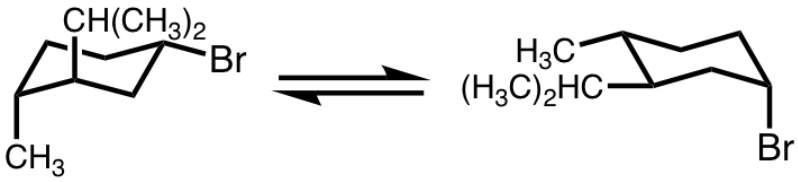


- (•) A
- ( ) B
- ( ) C
- ( ) D

Question 7

1 / 1 pts

Use the two chair conformation and energy value table shown below to answer questions 7-8.



Useful Energy Values

$\Delta G_{eq \rightarrow ax}$ (kJ/mol)	-Br: 2.3	-$CH(CH_3)_2$: 9.2	-CH_3: 7.1
Gauche interactions (kJ/mol)	CH_3/Br: 1.1	CH_3/$CH(CH_3)_2$: 4.6	

Calculate the difference in energy (absolute value) between the two chair conformations of Compound D. Useful energy values are provided for you.

- 18.6 kJ/mol
- 14.0 kJ/mol
- 9.4 kJ/mol
- 4.4 kJ/mol

Question 8
0.5 / 0.5 pts

If you have a bottle full of cyclohexane molecules from the previous problem, which chair conformation will be found in a higher concentration?

- Chair conformation on the left
- Chair conformation on the right

Quiz Score: 5 out of 5