

1. Define the following
 - a. Cycloalkanes
 - b. Alicyclic compounds
 - c. Constitutional isomers
 - d. Stereoisomers
 - e. Cis-trans isomers
 - f. Angle strain
 - g. Torsional strain
 - h. Steric strain
 - i. Conformers
 - j. Cyclohexane
 - i. Chair conformer
 - ii. Boat conformer
 - iii. Twist-boat conformer
 - iv. Axial position
 - v. Equatorial position
 - vi. Ring flip
 - vii. 1,3-diaxial interactions
 - viii. Gauche interactions

2. Calculate the steric strain for the most stable chair conformer and for a less stable conformer for the following
 - a. Trans-1-Ethyl-3-fluorocyclohexane
 - b. Cis-1,2-Diethylcyclohexane
 - c. Cis-4-Cyanocyclohexanecarboxylic acid

3. Draw the most stable chair conformer and one less stable chair conformer for the following and explain why?
 - a. Trans-1-t-Butyl-3-ethylcyclohexane

 - b. Trans-2-Methylcyclohexanol

 - c. Trans-1-Ethyl-4-isopropylcyclohexane

 - d. Cis-3-t-Butylcyclohexanecarboxylic acid

 - e. Cis-1-Bromo-2-t-butylcyclohexane

 - f. Cis-4-phenylcyclohexanecarbonitrile

 - g. Cis-1-Chloro-2-methylcyclohexane

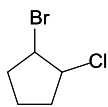
 - h. Trans-1-Chloro-2-ethylcyclohexane

 - i. Trans-4-t-Butylcyclohexanol

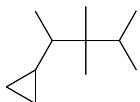
 - j. Cis-3-Methylcyclohexanecarbonitrile

4. Name the following

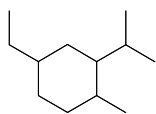
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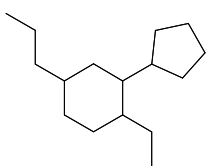
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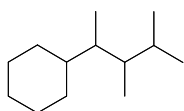
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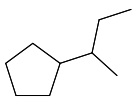
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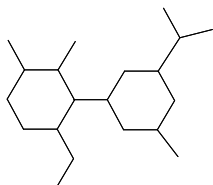
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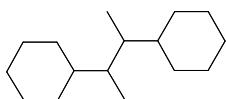
f.



g.



h.



5. Draw the following
- a. Trans-1-chloro-3-nitrocyclohexane

 - b. Cis-1-bromo-2-chlorocyclohexane

 - c. 2-Cyclopropyl-3,4,4-trimethylhexane

 - d. 1-(2,4-Dimethylcyclopentyl)hexane

 - e. 2-Sec-Butyl-5-(1,2-dimethylpropyl)-1-ethyl-3-methylcyclohexane

 - f. 2-Cyclobutyl-3-cyclopentyl-4-cyclopropyl-2,5,5-trimethylhexane

 - g. 1-T-Butyl-3-isopropyl-2-methylcyclopentane

 - h. 1-Ethyl-3-methyl-2-(1-methylethyl)-5-(1-methylpropyl)cyclohexane