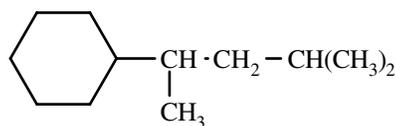


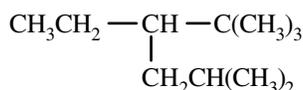
- 1) Which two names can be correctly associated with the compound below?



- [a] 1-cyclohexyl-1,3-dimethylbutane
 [b] 2-cyclohexyl-3-methylpentane
 [c] 4-cyclohexyl-2-methylpentane
 [d] (1,3-dimethylbutyl)cyclohexane
 [e] (1-methylisopentyl)cyclohexane
 [1] AD [2] AE [3] BD [4] BE [5] CD

T1S01-0607[5] ← [5] is the answer to above question.

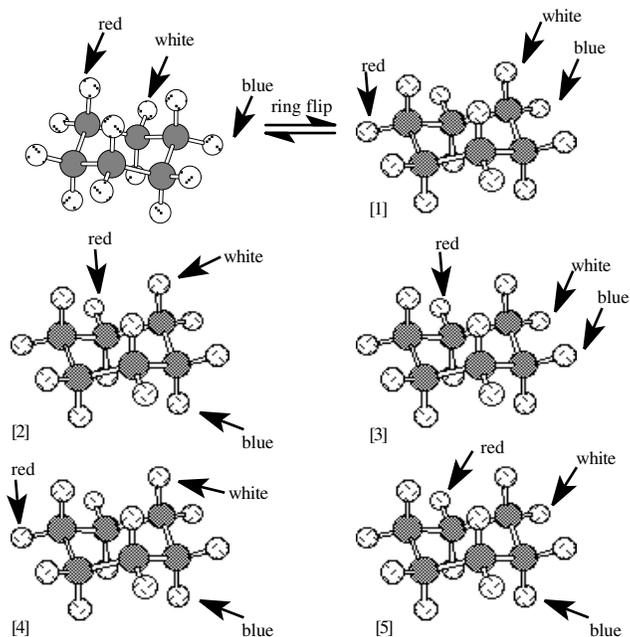
- 2) Which groups are present in the molecule below?
 [a] ethyl [b] propyl [c] isopropyl [d] isobutyl [e] sec-butyl
 [f] tert-butyl



- [1] a, c, d, f [2] a, b, d, f [3] a, c, d, f [4] b, c, f [5] a, c, d

T1S01-01[3] ← [3] is the answer to above question.

- 3) When the molecule in the upper left hand corner below is converted to its other chair conformation the three methyl groups labeled “red, white, and blue” will be in which positions?



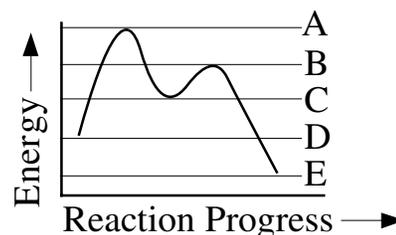
- T1S00-01[2] ← etc.
 4) ↑ In the previous question, which structure will be MOST STABLE? Assume all unlabeled atoms bonded to the cyclohexane ring to be hydrogen.

- T1S00-04[3]
 5) ↑ Referring to the same question, how many butane-like gauche interactions are present in answer choice two?
 [1] 1 [2] 2 [3] 3 [4] 4 [5] 5

- T1S00-03[5]
 6) ↑ Referring to the same question, the red, white and blue groups in answer choice one, respectively are:
 [1] equatorial, axial, equatorial [2] axial, equatorial, axial
 [3] equatorial, equatorial, axial [4] axial, axial, equatorial
 [5] axial, equatorial, equatorial

T1S00-05[1]

The next two questions pertain to this energy diagram:



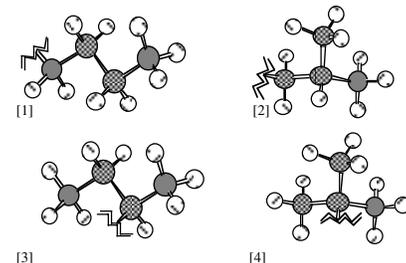
- 7) Which statement is FALSE with regard to this diagram?
 [1] The reaction has two steps the first is endothermic, while the second is exothermic.
 [2] The first step is the rate determining step
 [3] Two transition states are present in the reaction mechanism
 [4] At equilibrium the concentration of the intermediate will be greater than the reactant.
 [5] At equilibrium the concentration of the products will exceed the concentration of the reactants.

T1S01-09[4]

- 8) ↑ Which statement is FALSE with regard to the previous diagram?
 [1] The transition from energy level E to energy level B represents the overall energy of activation of the reverse reaction.
 [2] The energy of reaction is negative.
 [3] The transition from energy level D to energy level C, represents the energy change between the reactants and the intermediate.
 [4] The magnitude of the energy barrier that must be overcome is of greater importance when evaluating the rate of reaction, than is the absolute value of the most energetic activated complex present in the reaction mechanism.
 [5] If the intermediate in this reaction mechanism were produced by some alternative pathway, the product of this reaction would form faster than the reactant would.

T1S01-09[1]

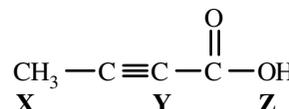
- 9) Four ball and stick representations are shown on the right. Which represents the correct order of butyl substituents from one to four respectively?



- [1] normal, tert, sec, iso [2] sec, iso, normal, tert
 [3] normal, tert, iso, sec [4] normal, iso, sec, tert
 [5] sec, iso, tert, normal

T1S00-04[4]

- 10) What are the number of sp, sp² and sp³ hybridized atoms respectively, in the compound below?
 [1] 1, 3, 2
 [2] 2, 3, 1
 [3] 2, 2, 2
 [4] 3, 2, 1
 [5] 3, 1, 2



T1S99-01[2]

- 11) ↑ What is the expected bond angle between atoms X and Y, and between atoms Y and Z, in the representation above?
 [1] 180°, 120° [2] 180, 180° [3] 109.5°, 120° [4] 109°, 180°
 [5] 109, 109°

T1S980405-[1]