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| 1. Approximately how long is a C−C single bond of an alkane?   |  |  |  | | --- | --- | --- | |  | a. | 111 pm | |  | b. | 134 pm | |  | c. | 142 pm | |  | d. | 153 pm |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 2. What is the approximate C−C−C bond angle in propane?   |  |  |  | | --- | --- | --- | |  | a. | 90° | |  | b. | 109° | |  | c. | 120° | |  | d. | 180° |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 3. What is the name of the linear hydrocarbon with the molecular formula C7H16?   |  |  |  | | --- | --- | --- | |  | a. | hexane | |  | b. | heptane | |  | c. | decane | |  | d. | undecane |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 4. What is the name of the linear hydrocarbon with the molecular formula C11H24?   |  |  |  | | --- | --- | --- | |  | a. | heptane | |  | b. | decane | |  | c. | undecane | |  | d. | eicosane |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 5. How many hydrogen atoms are there in nonane, the linear hydrocarbon with nine carbon atoms?   |  |  |  | | --- | --- | --- | |  | a. | 16 | |  | b. | 18 | |  | c. | 20 | |  | d. | 22 |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 6. How many hydrogen atoms are there in dodecane, the linear hydrocarbon with twelve carbon atoms?   |  |  |  | | --- | --- | --- | |  | a. | 12 | |  | b. | 20 | |  | c. | 24 | |  | d. | 26 |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 7. How many constitutional isomers are there with the molecular formula C4H10?   |  |  |  | | --- | --- | --- | |  | a. | 2 | |  | b. | 3 | |  | c. | 4 | |  | d. | 5 |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 8. How many constitutional isomers are there with the molecular formula C5H12?   |  |  |  | | --- | --- | --- | |  | a. | 2 | |  | b. | 3 | |  | c. | 4 | |  | d. | 5 |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 9. How many constitutional isomers are there with the molecular formula C6H14?   |  |  |  | | --- | --- | --- | |  | a. | 3 | |  | b. | 4 | |  | c. | 5 | |  | d. | 8 |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 10. What is the IUPAC name of the following compound?   |  |  |  | | --- | --- | --- | |  | a. | 3-propylpentane | |  | b. | 1,1-diethylpropane | |  | c. | 3-ethylhexane | |  | d. | isooctane |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 11. What is the IUPAC name of the following compound?   |  |  |  | | --- | --- | --- | |  | a. | 2-ethyl-4-methylpentane | |  | b. | 2,4-dimethylhexane | |  | c. | 3,5-dimethylhexane | |  | d. | 1,1,3-trimethylpentane |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 12. What is the IUPAC name of the following compound?   |  |  |  | | --- | --- | --- | |  | a. | 2,2-dimethyl-4-ethylheptane | |  | b. | 4-ethyl-2,2-dimethyl-heptane | |  | c. | 6,6-dimethyl-4-ethylheptane | |  | d. | 4-ethyl-6,6-dimethyl-heptane |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 13. What is the IUPAC name of the following compound?   |  |  |  | | --- | --- | --- | |  | a. | 5,5-dimethyl-3-ethylheptane | |  | b. | 5-ethyl-3,3-dimethyl-heptane | |  | c. | 3,3-dimethyl-5-ethylheptane | |  | d. | 3-ethyl-5,5-dimethyl-heptane |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 14. What is the IUPAC name of the following compound?   |  |  |  | | --- | --- | --- | |  | a. | 2-isopropyl-5-methylpentane | |  | b. | 5-isopropyl-2-methylpentane | |  | c. | 2,3,5-trimethylhexane | |  | d. | 1,2-diisopropylpropane |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 15. What is the IUPAC name of the following compound?   |  |  |  | | --- | --- | --- | |  | a. | 2,4-dimethyl-3-isopropyl-pentane | |  | b. | 3-isopropyl-1,5-dimethylpentane | |  | c. | 3-isopropyl-2,4-dimethylpentane | |  | d. | triisopropylmethane |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 16. Which of the following compounds has 1°, 2°, 3° and 4° carbon atoms?   |  |  |  | | --- | --- | --- | |  | a. | hexane | |  | b. | 2-methylhexane | |  | c. | 2,2-dimethylhexane | |  | d. | 2,2,3-trimethylhexane |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 17. Which of the following compounds has only 1° and 3° carbon atoms?   |  |  |  | | --- | --- | --- | |  | a. | hexane | |  | b. | 2-methylpentane | |  | c. | 3-methylpentane | |  | d. | 2,3-dimethylbutane |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 18. What is the correct assignment of common names for the following molecules?   |  |  |  | | --- | --- | --- | |  | a. | *i* = butane; *ii* = neopentane; *iii* = isopentane | |  | b. | *i* = neobutane; *ii* = isobutane; *iii* = pentane | |  | c. | *i* = butane; *ii* = isobutane; *iii* = isopentane | |  | d. | *i* = butane; *ii* = isobutane; *iii* = neopentane |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 19. What is the correct assignment of common names for the following molecules?   |  |  |  | | --- | --- | --- | |  | a. | *i* = pentane; *ii* = isopentane; *iii* = neopentane | |  | b. | *i* = neopentane; *ii* = isopentane; *iii* = pentane | |  | c. | *i* = pentane; *ii* = neopentane; *iii* = isopentane | |  | d. | *i* = neopentane; *ii* = pentane; *iii* = isopentane |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 20. What is the IUPAC name of the following compound?   |  |  |  | | --- | --- | --- | |  | a. | 1-isopropyl-4,6-dimethylcyclohexane | |  | b. | 1-isopropyl-2,4-dimethylcyclohexane | |  | c. | 4-isopropyl-1,3-dimethylcyclohexane | |  | d. | 4-isopropyl-1,5-dimethylcyclohexane |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 21. What is the IUPAC name of the following compound?   |  |  |  | | --- | --- | --- | |  | a. | 1-methylbicyclo[2.2.1]heptane | |  | b. | 2-methylbicyclo[2.2.1]heptane | |  | c. | 3-methylbicyclo[2.2.1]heptane | |  | d. | 4-methylbicyclo[2.2.1]heptane |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 22. What is the IUPAC name of the following compound?   |  |  |  | | --- | --- | --- | |  | a. | bicyclo[4.3]nonane | |  | b. | bicyclo[4.3.0]nonane | |  | c. | bicyclo[6.5]nonane | |  | d. | bicyclo[6.5.0]nonane |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 23. What is the IUPAC name for the following compound?   |  |  |  | | --- | --- | --- | |  | a. | cycloheptane | |  | b. | bicyclo[3.2.0]heptane | |  | c. | bicyclo[5.4]heptane | |  | d. | cyclobutylcyclopentane |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 24. What is the IUPAC name for the following compound?   |  |  |  | | --- | --- | --- | |  | a. | bicyclo[5.4.3]octane | |  | b. | bicyclo[3.2.1]octane | |  | c. | bicyclo[3.2.1]hexane | |  | d. | bicyclo[2.2.1]octane |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 25. Which of the following Newman projections does *not* represent 2-methylhexane?   |  |  |  | | --- | --- | --- | |  | a. | **1** | |  | b. | **2** | |  | c. | **3** | |  | d. | **4** |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 26. Which of the following Newman projections represents 2,4-dimethylpentane?   |  |  |  | | --- | --- | --- | |  | a. | **1** | |  | b. | **2** | |  | c. | **3** | |  | d. | **4** |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 27. Which of the following Newman projections represents the most stable conformation of 2,3-dimethylbutane?   |  |  |  | | --- | --- | --- | |  | a. | **1** | |  | b. | **2** | |  | c. | **3** | |  | d. | **4** |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 28. Which of the following Newman projections represents the most stable conformation of 2-methylbutane?   |  |  |  | | --- | --- | --- | |  | a. | **1** | |  | b. | **2** | |  | c. | **3** | |  | d. | **4** |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 29. Which of the following cycloalkanes has the most ring strain?   |  |  |  | | --- | --- | --- | |  | a. | cyclopropane | |  | b. | cyclobutane | |  | c. | cyclopentane | |  | d. | cyclohexane |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 30. Which of the following cycloalkanes has the least ring strain?   |  |  |  | | --- | --- | --- | |  | a. | cyclopropane | |  | b. | cyclopentane | |  | c. | cyclohexane | |  | d. | cycloheptane |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 31. Which of the following structures represents *trans-*1,3-dimethylcyclohexane?   |  |  |  | | --- | --- | --- | |  | a. | **1** | |  | b. | **2** | |  | c. | **3** | |  | d. | **4** |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 32. Which of the following structures represents *trans-*1,2-dimethylcyclohexane?   |  |  |  | | --- | --- | --- | |  | a. | **1** | |  | b. | **2** | |  | c. | **3** | |  | d. | **4** |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 33. Which of the following is the most stable conformation of *cis-*1-isopropyl-3-methylcyclohexane?   |  |  |  | | --- | --- | --- | |  | a. | **1** | |  | b. | **2** | |  | c. | **3** | |  | d. | **4** |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 34. Which of the following is the most stable conformation of *trans-*1-ethyl-3-methylcyclohexane?   |  |  |  | | --- | --- | --- | |  | a. | **1** | |  | b. | **2** | |  | c. | **3** | |  | d. | **4** |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 35. Which of the following alkanes has the highest boiling point?   |  |  |  | | --- | --- | --- | |  | a. | propane | |  | b. | butane | |  | c. | pentane | |  | d. | hexane |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 36. Which of the following alkanes has the highest boiling point?   |  |  |  | | --- | --- | --- | |  | a. | 2,3-dimethylbutane | |  | b. | 2-methylpentane | |  | c. | 3-methylpentane | |  | d. | hexane |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 37. What is the IUPAC name of the following compound?   |  |  |  | | --- | --- | --- | |  | a. | *trans-*1-isopropyl-4-methylcyclohexane | |  | b. | *cis-*1-isopropyl-4-methylcyclohexane | |  | c. | *cis-*2-isopropyl-5-methylcyclohexane | |  | d. | *cis-*1-*tert*-butyl-4-methylcyclohexane |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 38. What is the IUPAC name of the following compound?   |  |  |  | | --- | --- | --- | |  | a. | *trans-*1-isopropyl-4-methylcyclopentane | |  | b. | *cis-*1-*tert*-butyl-2-methylcyclopentane | |  | c. | *trans-*1-*tert*-butyl-2-methylcyclopentane | |  | d. | *cis-*1-isopropyl-2-methylcyclopentane |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 39. Which one of the following structures represents a different compound from the other three?   |  |  |  | | --- | --- | --- | |  | a. | **1** | |  | b. | **2** | |  | c. | **3** | |  | d. | **4** |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 40. Which one of the following structures represents a different compound from the other three?   |  |  |  | | --- | --- | --- | |  | a. | **1** | |  | b. | **2** | |  | c. | **3** | |  | d. | **4** |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 41. In which of the following compounds are all of the carbon atoms in the same plane?   |  |  |  | | --- | --- | --- | |  | a. | cyclopropane | |  | b. | cyclobutane | |  | c. | cyclopentane | |  | d. | cyclohexane |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 42. Which of the following compounds can adopt a chair conformation in which there are no axial methyl groups?   |  |  |  | | --- | --- | --- | |  | a. | 1,1-dimethylcyclohexane | |  | b. | *cis-*1,2-dimethylcyclohexane | |  | c. | *trans-*1,2-dimethylcyclohexane | |  | d. | *cis-*1,3-dimethylcyclohexane |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 43. Which of the following compounds can adopt a chair conformation in which there are no axial methyl groups?   |  |  |  | | --- | --- | --- | |  | a. | *cis-*1,2-dimethylcyclohexane | |  | b. | *cis-*1,3-dimethylcyclohexane | |  | c. | *trans-*1,3-dimethylcyclohexane | |  | d. | *cis-*1,4-dimethylcyclohexane |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 44. Which of the following statements is not true regarding the conformation of substituted cyclohexanes?   |  |  |  | | --- | --- | --- | |  | a. | ring inversion of cyclohexane between two chair conformations takes place via a boat conformation | |  | b. | substituted cyclohexanes are destabilized by 1,3-diaxial interactions | |  | c. | the boat conformation of cyclohexane is usually more stable than the chair conformation | |  | d. | the relative amount of two conformations of substituted cyclohexanes can be determined from the difference in strain energy |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 45. What is the approximate dihedral angle between the two chlorine atoms in *cis*-1,2-dichlorocyclohexane?   |  |  |  | | --- | --- | --- | |  | a. | 0° | |  | b. | 60° | |  | c. | 120° | |  | d. | 180° |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 46. What is the approximate dihedral angle between the two chlorine atoms in the diequatorial conformation of *trans-*1,2-dichlorocyclohexane?   |  |  |  | | --- | --- | --- | |  | a. | 0° | |  | b. | 60° | |  | c. | 120° | |  | d. | 180° |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 47. What is the approximate dihedral angle between the two chlorine atoms in the diaxial conformation of *trans-*1,2-dichlorocyclohexane?   |  |  |  | | --- | --- | --- | |  | a. | 0° | |  | b. | 60° | |  | c. | 120° | |  | d. | 180° |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 48. Which of the following is *not* true regarding the properties of alkanes?   |  |  |  | | --- | --- | --- | |  | a. | alkanes are nonpolar | |  | b. | alkanes burn in air to give H2O and CO2 | |  | c. | alkanes are highly miscible with water | |  | d. | the strongest intermolecular force between alkane molecules is the van der Waals interaction |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 49. Which of the following undergoes the most exothermic combustion?   |  |  |  | | --- | --- | --- | |  | a. | octane | |  | b. | 2-methylheptane | |  | c. | 2,2-dimethylhexane | |  | d. | 2,2,3,3-tetramethylbutane |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 50. How many moles of molecular oxygen (O2) are consumed in the complete combustion of one mole of octane (C8H18)?   |  |  |  | | --- | --- | --- | |  | a. | 12.5 | |  | b. | 13 | |  | c. | 17 | |  | d. | 26 |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 51. How many moles of molecular oxygen (O2) are consumed in the complete combustion of one mole of hexane (C6H14)?   |  |  |  | | --- | --- | --- | |  | a. | 6 | |  | b. | 9.5 | |  | c. | 12.5 | |  | d. | 14 |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 52. Which of the following statements is *not* true?   |  |  |  | | --- | --- | --- | |  | a. | Combustion of an alkane is an exothermic reaction. | |  | b. | The heat of combustion of propane is three times that of methane. | |  | c. | The constitutional isomers of C7H16 have different heats of combustion from one another | |  | d. | The products of combustion of an alkane are H2O and CO2. |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 53. Which of the following is the steroid nucleus?   |  |  |  | | --- | --- | --- | |  | a. | **1** | |  | b. | **2** | |  | c. | **3** | |  | d. | **4** |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 54. Which of the following cycloalkanes has the largest heat of combustion?   |  |  |  | | --- | --- | --- | |  | a. | cyclopropane | |  | b. | cyclobutane | |  | c. | cyclopentane | |  | d. | cyclohexane |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 55. Which of the following cycloalkanes has the largest heat of combustion per carbon atom?   |  |  |  | | --- | --- | --- | |  | a. | cyclopropane | |  | b. | cyclopentane | |  | c. | cyclohexane | |  | d. | cycloheptane |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 56. Which of the following cycloalkanes has the smallest heat of combustion per carbon atom?   |  |  |  | | --- | --- | --- | |  | a. | cyclopropane | |  | b. | cyclopentane | |  | c. | cyclohexane | |  | d. | cycloheptane |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 57. Which of the following structures is different from the other three?   |  |  |  | | --- | --- | --- | |  | a. | **1** | |  | b. | **2** | |  | c. | **3** | |  | d. | **4** |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 58. Which of the following structures is different from the other three?   |  |  |  | | --- | --- | --- | |  | a. | **1** | |  | b. | **2** | |  | c. | **3** | |  | d. | **4** |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 59. Which of the following substituted cyclohexanes has the most negative value of Δ*G*° for ring flipping from the conformation in which the substituent is axial to the one where it is equatorial?   |  |  |  | | --- | --- | --- | |  | a. | methylcyclohexane | |  | b. | chlorocyclohexane | |  | c. | isopropylcyclohexane | |  | d. | ethynylcyclohexane |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 60. Which of the following substituted cyclohexanes has the most negative value of Δ*G*° for ring flipping from the conformation in which the substituent is axial to the one where it is equatorial?   |  |  |  | | --- | --- | --- | |  | a. | fluorocyclohexane | |  | b. | methylcyclohexane | |  | c. | ethylcyclohexane | |  | d. | *tert-*butylcyclohexane |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 61. The Newman projection of the gauche conformation of 1,2-dichloroethane is shown below.     |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *POINTS:* | 1 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/10/2017 1:33 AM | |

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| 62. The most stable conformation of an alkane occurs when carbon−carbon bonds are staggered and bulky groups are anti.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *POINTS:* | 1 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 63. The following pairs of Newman projections represent the same compound but in differing conformations.     |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *POINTS:* | 1 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/10/2017 1:38 AM | |

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| 64. There are four constitutional isomers for the molecular formula C6H14.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *POINTS:* | 1 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 65. The following Newman projection represents 2-methylhexane.     |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *POINTS:* | 1 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/10/2017 1:37 AM | |

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| 66. The following structures represent, from left to right,  a *cis* and a *trans* isomer.     |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *POINTS:* | 1 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/10/2017 1:37 AM | |

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| 67. The following structures represent a pair of constitutional isomers.     |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *POINTS:* | 1 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/10/2017 1:38 AM | |

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| 68. 3-methylhexylcyclopentane represents a correct IUPAC name.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *POINTS:* | 1 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 69. In the following structure the positions labeled a and d are equatorial positions.     |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *POINTS:* | 1 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/13/2017 2:28 AM | |

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| 70. In the following conversion,  the conformations are of equal stability.     |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *POINTS:* | 1 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/10/2017 4:39 AM | |

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| 71. The correct IUPAC name for the following compound is\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.     |  |  | | --- | --- | | *ANSWER:* | 3-methyl-5-(1-methylethyl)octane  3-methyl-5-isopropyloctane | | *POINTS:* | 1 | | *QUESTION TYPE:* | Completion | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/13/2017 2:29 AM | |

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| 72. The tertiary carbon atom in the following structure is indicated by the letter\_\_\_\_\_.     |  |  | | --- | --- | | *ANSWER:* | b  B | | *POINTS:* | 1 | | *QUESTION TYPE:* | Completion | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/13/2017 2:30 AM | |

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| Match the Newman projection for the conformation of 2-methylbutane to the indicated position on the potential energy diagram.    ​   |  |  |  |  | | --- | --- | --- | --- | |  |  |  |  | | **A** | **B** | **C** | **D** | |

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| 73. Conformation A is represented by Roman numeral \_\_\_\_.   |  |  | | --- | --- | | *ANSWER:* | II | | *POINTS:* | 1 | | *QUESTION TYPE:* | Completion | | *HAS VARIABLES:* | False | | *PREFACE NAME:* | PE Diagram | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 74. Conformation B is represented by Roman numeral \_\_\_\_.   |  |  | | --- | --- | | *ANSWER:* | III | | *POINTS:* | 1 | | *QUESTION TYPE:* | Completion | | *HAS VARIABLES:* | False | | *PREFACE NAME:* | PE Diagram | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 75. Conformation C is represented by Roman numeral \_\_\_\_.   |  |  | | --- | --- | | *ANSWER:* | IV | | *POINTS:* | 1 | | *QUESTION TYPE:* | Completion | | *HAS VARIABLES:* | False | | *PREFACE NAME:* | PE Diagram | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 76. Conformation D is represented by Roman numeral \_\_\_\_.   |  |  | | --- | --- | | *ANSWER:* | I | | *POINTS:* | 1 | | *QUESTION TYPE:* | Completion | | *HAS VARIABLES:* | False | | *PREFACE NAME:* | PE Diagram | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 77. What is the IUPAC name of the following compound?   |  |  | | --- | --- | | *ANSWER:* | 4-ethyl-2-methylhexane | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 78. What is the IUPAC name of the following compound?   |  |  | | --- | --- | | *ANSWER:* | 3-ethyl-2-methylhexane | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 79. What is the IUPAC name of the following compound?   |  |  | | --- | --- | | *ANSWER:* | 2,4,4-trimethylhexane | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 80. What is the IUPAC name of the following compound?   |  |  | | --- | --- | | *ANSWER:* | 2,2,4-trimethylhexane | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 81. What is the IUPAC name of the following compound?   |  |  | | --- | --- | | *ANSWER:* | bicyclo[4.2.0]octane | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 82. What is the IUPAC name of the following compound?   |  |  | | --- | --- | | *ANSWER:* | bicyclo[2.2.1]heptane | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 83. What is the IUPAC name of the following compound?   |  |  | | --- | --- | | *ANSWER:* | *cis*-1-*tert*-butyl-2-methylcyclohexane  *[ignoring absolute stereochemistry in Chap 2]* | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 84. What is the IUPAC name of the following compound?   |  |  | | --- | --- | | *ANSWER:* | *cis*-1-isopropyl-3-methylcyclohexane  *[ignoring absolute stereochemistry in Chap 2]* | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 85. How many hydrogen atoms are there in decane?   |  |  | | --- | --- | | *ANSWER:* | 22 | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 86. How many hydrogen atoms are there in octane?   |  |  | | --- | --- | | *ANSWER:* | 18 | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 87. What are the common and IUPAC names of the following compound?   |  |  | | --- | --- | | *ANSWER:* | *common:* neopentane *IUPAC:* 2,2-dimethylpropane | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 88. What are the common and IUPAC names of the following compound?   |  |  | | --- | --- | | *ANSWER:* | *common:* isopentane *IUPAC:* 2-dimethylbutane | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 89. What is the IUPAC name of the following compound?   |  |  | | --- | --- | | *ANSWER:* | butanal | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 90. What is the IUPAC name of the following compound?   |  |  | | --- | --- | | *ANSWER:* | butanone | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 91. Provide a line-bond structure of hexanoic acid.   |  |  | | --- | --- | | *ANSWER:* |  | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 92. Provide a line-bond structure of pentanal.   |  |  | | --- | --- | | *ANSWER:* |  | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 93. Provide a Newman projection of the most stable conformation of 2-methylpentane, (CH3)2CHCH2CH2CH3, looking along the C2-C3 bond   |  |  | | --- | --- | | *ANSWER:* |  | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/10/2017 5:50 AM | |

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| 94. Provide a Newman projection of the most stable conformation of 3-methylpentane, CH3CH2CH(CH3)CH2CH3 looking along the C2-C3 bond.   |  |  | | --- | --- | | *ANSWER:* |  | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 95. Provide a neatly drawn plot of energy versus dihedral angle for rotation around the C2-C3 bond of butane.   |  |  | | --- | --- | | *ANSWER:* |  | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 96. Provide a neatly drawn plot of energy versus dihedral angle for rotation around the C-C bond of ethane.   |  |  | | --- | --- | | *ANSWER:* |  | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 3/12/2015 3:24 PM | | *DATE MODIFIED:* | 3/12/2015 3:24 PM | |

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| 97. Identify the constitutional isomer with the molecular formula C7H16.  ​   |  |  |  | | --- | --- | --- | |  | a. | Only I | |  | b. | Only I and II | |  | c. | Only II | |  | d. | I, II, and III |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2017 7:38 AM | | *DATE MODIFIED:* | 4/13/2017 1:02 AM | |

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| 98. The molecular formulas of neopentane and isobutane are \_\_\_\_\_ and \_\_\_\_\_, respectively.   |  |  |  | | --- | --- | --- | |  | a. | C5H12; C4H8 | |  | b. | C5H10; C4H10 | |  | c. | C5H12; C4H11 | |  | d. | C5H12; C4H10 |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2017 7:54 AM | | *DATE MODIFIED:* | 4/11/2017 7:55 AM | |

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| 99. The total numbers of 2⁰ and 3⁰ carbon atoms in the following structure are \_\_\_\_\_ and \_\_\_\_\_, respectively.  ​   |  |  |  | | --- | --- | --- | |  | a. | 3; 7 | |  | b. | 7; 4 | |  | c. | 4; 6 | |  | d. | 6; 4 |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2017 7:57 AM | | *DATE MODIFIED:* | 4/11/2017 8:00 AM | |

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| 100. What is “X” in the following reaction?  ​   |  |  |  | | --- | --- | --- | |  | a. |  | |  | b. |  | |  | c. |  | |  | d. |  |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2017 8:01 AM | | *DATE MODIFIED:* | 4/11/2017 8:09 AM | |

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| 101. What is “X” in the following reaction?  ​   |  |  |  | | --- | --- | --- | |  | a. |  | |  | b. |  | |  | c. |  | |  | d. |  |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2017 8:04 AM | | *DATE MODIFIED:* | 4/11/2017 8:09 AM | |

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| 102. What is “X” in the following reaction?  ​   |  |  |  | | --- | --- | --- | |  | a. |  | |  | b. |  | |  | c. |  | |  | d. |  |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2017 8:10 AM | | *DATE MODIFIED:* | 4/19/2017 12:56 AM | |

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| Match the structures with their IUPAC names.   |  |  |  |  | | --- | --- | --- | --- | | a. |  | b. |  | | c. |  |  |  |  |  |  | | --- | --- | | *QUESTION TYPE:* | Matching | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2017 8:15 AM | | *DATE MODIFIED:* | 4/11/2017 8:26 AM | |

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| 103. 3-ethyl-2-methylhexane   |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | |

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| 104. 4-ethyl-2,2-dimethylhexane   |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | |

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| 105. 4-ethyl-2-methylhexane   |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | |