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Chapter 02 - Alkanes and Cycloalkanes

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
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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
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3. What is the name of the linear hydrocarbon with the molecular formula C_7H_{16}?
   a. hexane
   b. heptane
   c. decane
   d. undecane

ANSWER: b
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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4. What is the name of the linear hydrocarbon with the molecular formula $C_{11}H_{24}$?
   a. heptane
   b. decane
   c. undecane
   d. eicosane

ANSWER: c
POINTS: 1
QUESTION TYPE: Multiple Choice

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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
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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
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7. How many constitutional isomers are there with the molecular formula C_4H_{10}?

a. 2
b. 3
c. 4
d. 5

ANSWER: a
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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8. How many constitutional isomers are there with the molecular formula C_5H_{12}?

a. 2
b. 3
c. 4

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d. 5

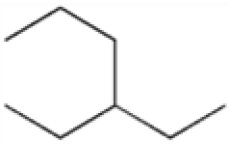
ANSWER: b
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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9. How many constitutional isomers are there with the molecular formula C_6H_{14}?

a. 3
b. 4
c. 5
d. 8

ANSWER: c
POINTS: 1
QUESTION TYPE: Multiple Choice
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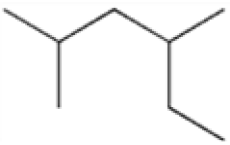
10. What is the IUPAC name of the following compound?



a. 3-propylpentane
b. 1,1-diethylpropane
c. 3-ethylhexane
d. isooctane

ANSWER: c
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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11. What is the IUPAC name of the following compound?



a. 2-ethyl-4-methylpentane
b. 2,4-dimethylhexane

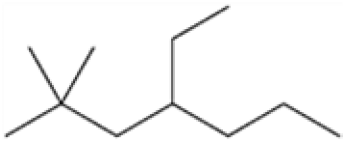
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c. 3,5-dimethylhexane
d. 1,1,3-trimethylpentane

ANSWER: b
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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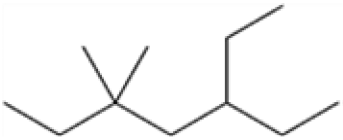
12. What is the IUPAC name of the following compound?



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
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13. What is the IUPAC name of the following compound?



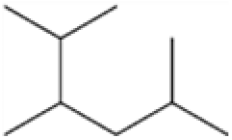
a. 5,5-dimethyl-3-ethylheptane
b. 5-ethyl-3,3-dimethyl-heptane
c. 3,3-dimethyl-5-ethylheptane
d. 3-ethyl-5,5-dimethyl-heptane

ANSWER: d
POINTS: 1
QUESTION TYPE: Multiple Choice
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14. What is the IUPAC name of the following compound?

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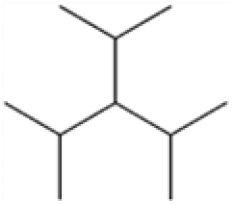
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a. 2-isopropyl-5-methylpentane
b. 5-isopropyl-2-methylpentane
c. 2,3,5-trimethylhexane
d. 1,2-diisopropylpropane

ANSWER: c
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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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
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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
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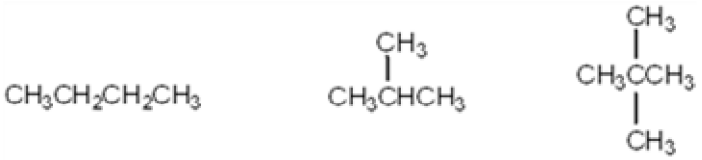
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17. Which of the following compounds has only 1° and 3° carbon atoms?

a. hexane
b. 2-methylpentane
c. 3-methylpentane
d. 2,3-dimethylbutane

ANSWER: d
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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18. What is the correct assignment of common names for the following molecules?

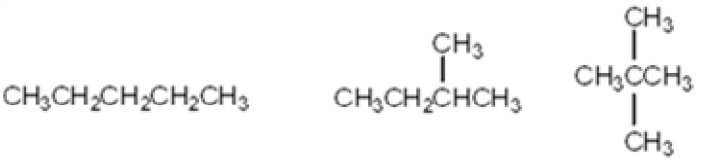


i *ii* *iii*

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
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19. What is the correct assignment of common names for the following molecules?



i *ii* *iii*

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

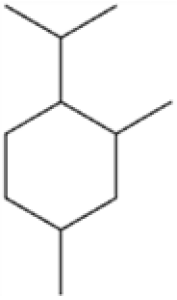
ANSWER: a
POINTS: 1
QUESTION TYPE: Multiple Choice

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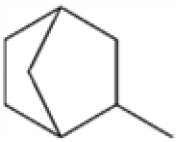
20. What is the IUPAC name of the following compound?



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
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21. What is the IUPAC name of the following compound?



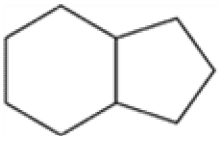
a. 1-methylbicyclo[2.2.1]heptane
b. 2-methylbicyclo[2.2.1]heptane
c. 3-methylbicyclo[2.2.1]heptane
d. 4-methylbicyclo[2.2.1]heptane

ANSWER: b
POINTS: 1
QUESTION TYPE: Multiple Choice
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22. What is the IUPAC name of the following compound?

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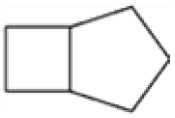
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a. bicyclo[4.3]nonane
b. bicyclo[4.3.0]nonane
c. bicyclo[6.5]nonane
d. bicyclo[6.5.0]nonane

ANSWER: b
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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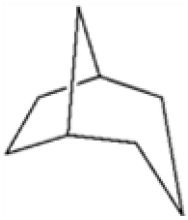
23. What is the IUPAC name for the following compound?



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
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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

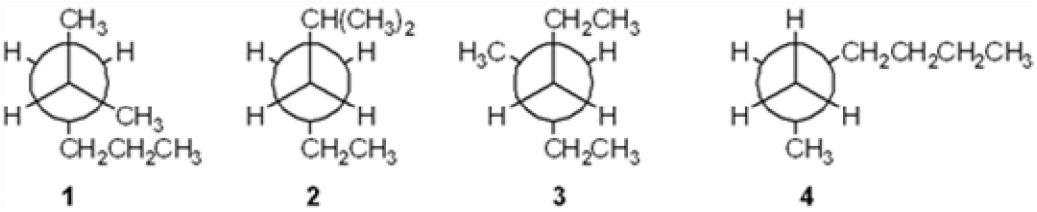
ANSWER: b
POINTS: 1
QUESTION TYPE: Multiple Choice

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25. Which of the following Newman projections does *not* represent 2-methylhexane?

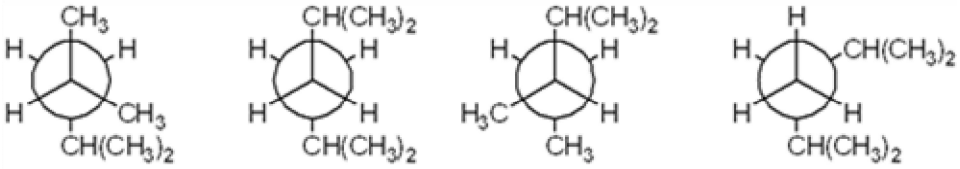


1 **2** **3** **4**

a. **1**
b. **2**
c. **3**
d. **4**

ANSWER: c
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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26. Which of the following Newman projections represents 2,4-dimethylpentane?



1 **2** **3** **4**

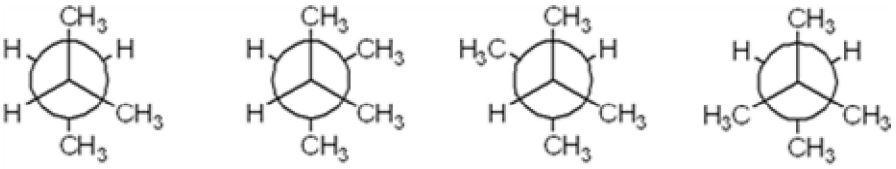
a. **1**
b. **2**
c. **3**
d. **4**

ANSWER: a
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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27. Which of the following Newman projections represents the most stable conformation of 2,3-dimethylbutane?

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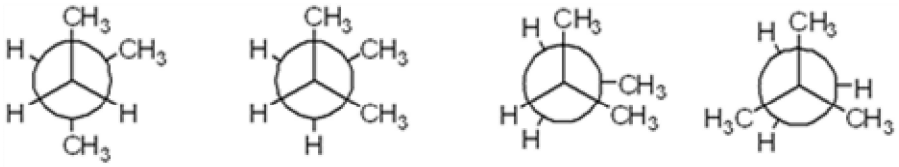


1 **2** **3** **4**

a. **1**
b. **2**
c. **3**
d. **4**

ANSWER: c
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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28. Which of the following Newman projections represents the most stable conformation of 2-methylbutane?



1 **2** **3** **4**

a. **1**
b. **2**
c. **3**
d. **4**

ANSWER: a
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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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
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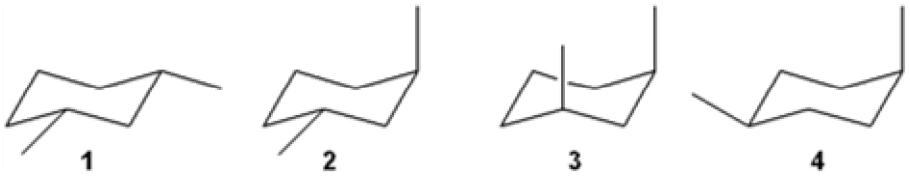
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30. Which of the following cycloalkanes has the least ring strain?

a. cyclopropane
b. cyclopentane
c. cyclohexane
d. cycloheptane

ANSWER: c
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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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
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32. Which of the following structures represents *trans*-1,2-dimethylcyclohexane?



a. **1**
b. **2**
c. **3**
d. **4**

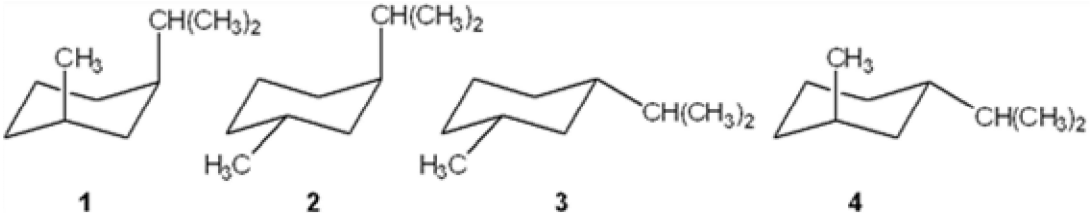
ANSWER: b
POINTS: 1
QUESTION TYPE: Multiple Choice

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33. Which of the following is the most stable conformation of *cis*-1-isopropyl-3-methylcyclohexane?

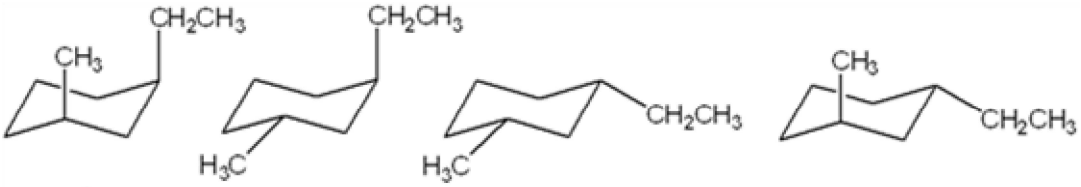


1 **2** **3** **4**

a. **1**
b. **2**
c. **3**
d. **4**

ANSWER: c
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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34. Which of the following is the most stable conformation of *trans*-1-ethyl-3-methylcyclohexane?



1 **2** **3** **4**

a. **1**
b. **2**
c. **3**
d. **4**

ANSWER: d
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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35. Which of the following alkanes has the highest boiling point?

a. propane
b. butane
c. pentane

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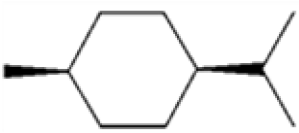
d. hexane

ANSWER: d
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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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
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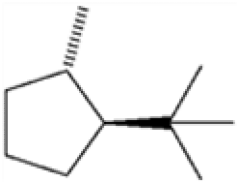
37. What is the IUPAC name of the following compound?



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
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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

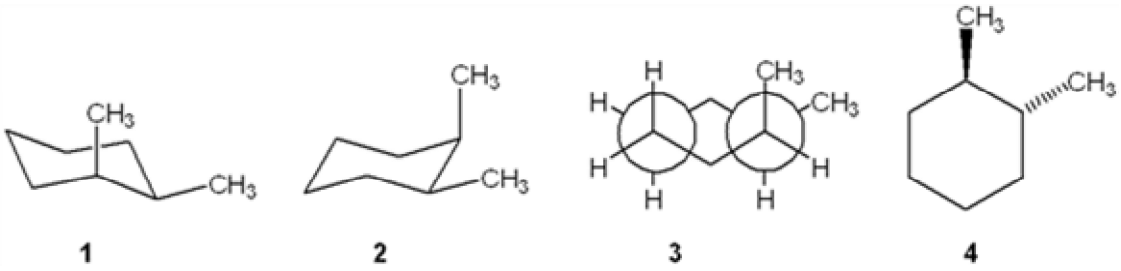
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c. *trans*-1-*tert*-butyl-2-methylcyclopentane
d. *cis*-1-isopropyl-2-methylcyclopentane

ANSWER: c
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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39. Which one of the following structures represents a different compound from the other three?

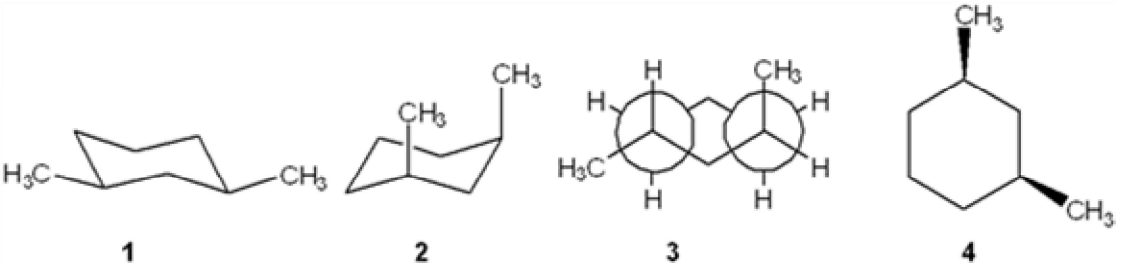


1 **2** **3** **4**

a. **1**
b. **2**
c. **3**
d. **4**

ANSWER: d
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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40. Which one of the following structures represents a different compound from the other three?



1 **2** **3** **4**

a. **1**
b. **2**
c. **3**
d. **4**

ANSWER: c
POINTS: 1
QUESTION TYPE: Multiple Choice

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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
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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
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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
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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

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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
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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
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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
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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

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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 H_2O and CO_2
    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
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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
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50. How many moles of molecular oxygen (O_2) are consumed in the complete combustion of one mole of octane (C_8H_{18})?
    a. 12.5
    b. 13
    c. 17
    d. 26
ANSWER: a
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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51. How many moles of molecular oxygen (O_2) are consumed in the complete combustion of one mole of hexane (C_6H_{14})?
    a. 6
    b. 9.5

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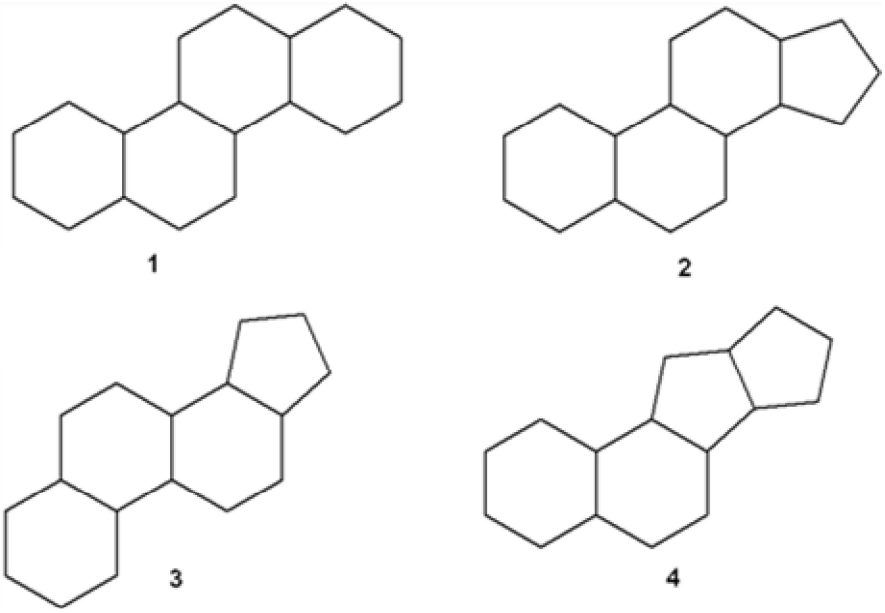
c. 12.5
d. 14

ANSWER: b
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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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 C_7H_{16} have different heats of combustion from one another
d. The products of combustion of an alkane are H_2O and CO_2.

ANSWER: b
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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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

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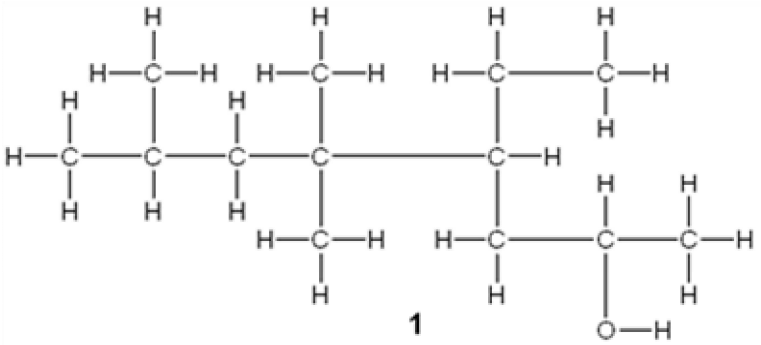
55. Which of the following cycloalkanes has the largest heat of combustion per carbon atom?
    a. cyclopropane
    b. cyclopentane
    c. cyclohexane
    d. cycloheptane
ANSWER: a
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
DATE CREATED: 3/12/2015 3:24 PM
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56.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

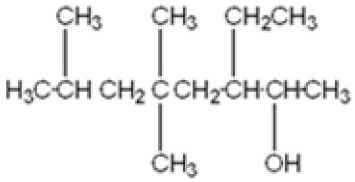
57. Which of the following structures is different from the other three?

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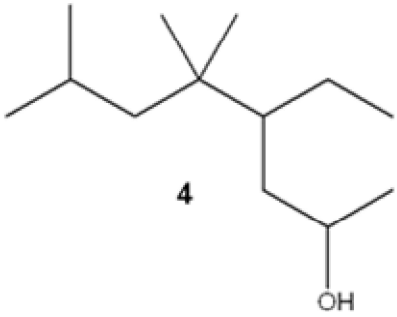
1



2

$(CH_3)_2CHCH_2C(CH_3)_2CH(CH_2CH_3)CH_2CH(OH)CH_3$

3



4

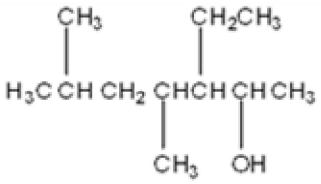
a. **1**
b. **2**
c. **3**
d. **4**

ANSWER: b
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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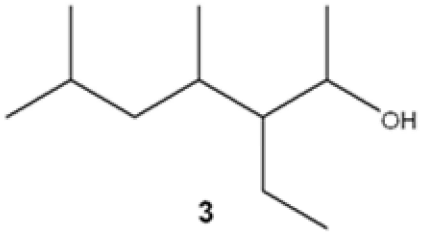
58. Which of the following structures is different from the other three?

$(CH_3)_2CHC(CH_3)CH_2CH(CH_2CH_3)CH_2CH(OH)CH_3$

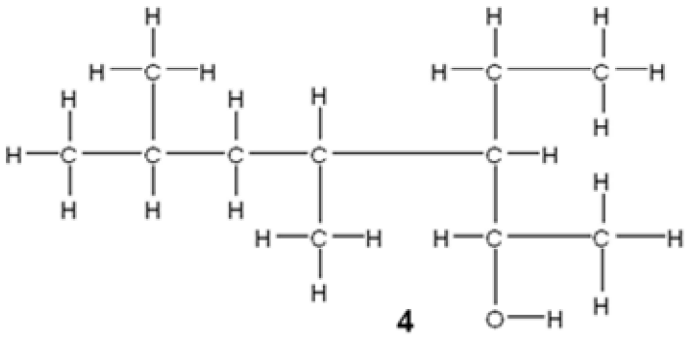
1



2



3



4

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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
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59. Which of the following substituted cyclohexanes has the most negative value of $\Delta G°$ 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

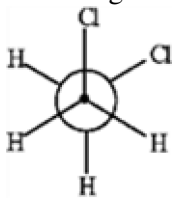
ANSWER: c
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
DATE CREATED: 3/12/2015 3:24 PM
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60. Which of the following substituted cyclohexanes has the most negative value of $\Delta G°$ for ring flipping from the conformation in which 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
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61. The Newman projection of the gauche conformation of 1,2-dichloroethane is shown below.



a. True
b. False

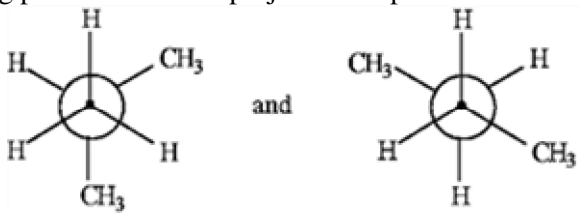
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ANSWER: True
POINTS: 1
QUESTION TYPE: True / False
HAS VARIABLES: False
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62. The most stable conformation of an alkane occurs when carbon−carbon bonds are staggered and bulky groups are anti.
    a. True
    b. False
ANSWER: True
POINTS: 1
QUESTION TYPE: True / False
HAS VARIABLES: False
DATE CREATED: 3/12/2015 3:24 PM
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63. The following pairs of Newman projections represent the same compound but in differing conformations.



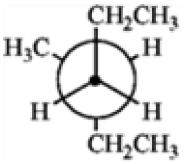
    a. True
    b. False
ANSWER: False
POINTS: 1
QUESTION TYPE: True / False
HAS VARIABLES: False
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64. There are four constitutional isomers for the molecular formula C_6H_{14}.
    a. True
    b. False
ANSWER: False
POINTS: 1
QUESTION TYPE: True / False
HAS VARIABLES: False
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65. The following Newman projection represents 2-methylhexane.

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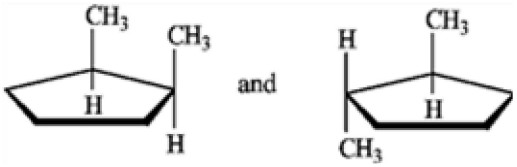
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a. True
b. False

ANSWER: False
POINTS: 1
QUESTION TYPE: True / False
HAS VARIABLES: False
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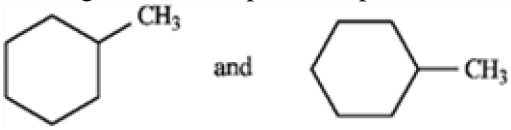
66. The following structures represent, from left to right, a *cis* and a *trans* isomer.



a. True
b. False

ANSWER: True
POINTS: 1
QUESTION TYPE: True / False
HAS VARIABLES: False
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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
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68. 3-methylhexylcyclopentane represents a correct IUPAC name.

a. True
b. False

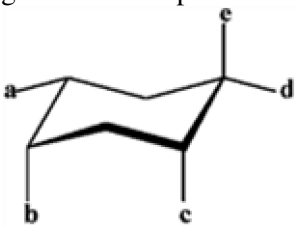
ANSWER: False

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POINTS: 1
QUESTION TYPE: True / False
HAS VARIABLES: False
DATE CREATED: 3/12/2015 3:24 PM
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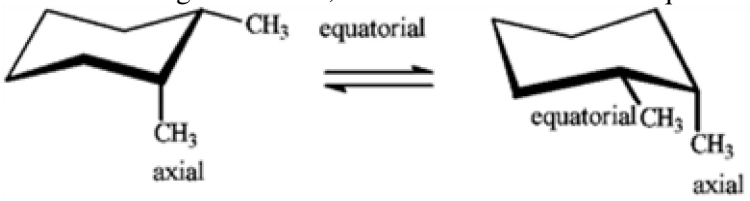
69. In the following structure the positions labeled a and d are equatorial positions.



a. True
b. False

ANSWER: True
POINTS: 1
QUESTION TYPE: True / False
HAS VARIABLES: False
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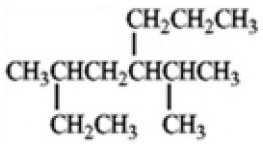
70. In the following conversion, the conformations are of equal stability.



a. True
b. False

ANSWER: True
POINTS: 1
QUESTION TYPE: True / False
HAS VARIABLES: False
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71. The correct IUPAC name for the following compound is_____.



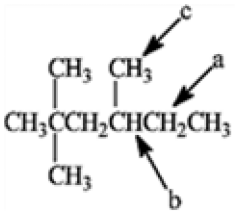
ANSWER: 3-methyl-5-(1-methylethyl)octane
3-methyl-5-isopropyloctane
POINTS: 1

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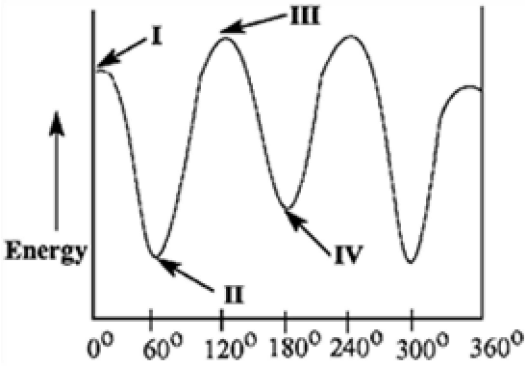
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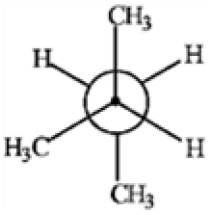
72. The tertiary carbon atom in the following structure is indicated by the letter_____.



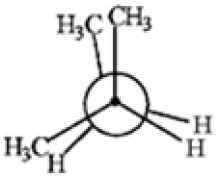
ANSWER: b
B
POINTS: 1
QUESTION TYPE: Completion
HAS VARIABLES: False
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Match the Newman projection for the conformation of 2-methylbutane to the indicated position on the potential energy diagram.

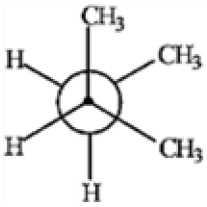




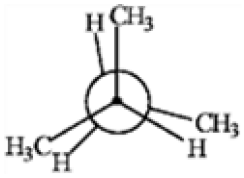
A



B



C



D

73. Conformation A is represented by Roman numeral ____.
ANSWER: II
POINTS: 1
QUESTION TYPE: Completion
HAS VARIABLES: False
PREFACE NAME: PE Diagram

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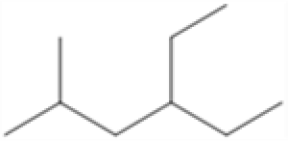
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74. Conformation B is represented by Roman numeral ____.
ANSWER: III
POINTS: 1
QUESTION TYPE: Completion
HAS VARIABLES: False
PREFACE NAME: PE Diagram
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75. Conformation C is represented by Roman numeral ____.
ANSWER: IV
POINTS: 1
QUESTION TYPE: Completion
HAS VARIABLES: False
PREFACE NAME: PE Diagram
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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
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77. What is the IUPAC name of the following compound?

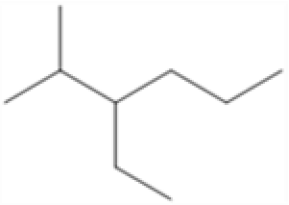


ANSWER: 4-ethyl-2-methylhexane
POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
DATE CREATED: 3/12/2015 3:24 PM
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78. What is the IUPAC name of the following compound?

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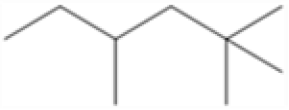
ANSWER: 3-ethyl-2-methylhexane
POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
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DATE MODIFIED: 3/12/2015 3:24 PM

79. What is the IUPAC name of the following compound?



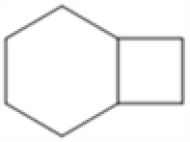
ANSWER: 2,4,4-trimethylhexane
POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
DATE CREATED: 3/12/2015 3:24 PM
DATE MODIFIED: 3/12/2015 3:24 PM

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

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

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

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

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

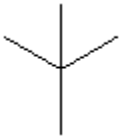
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86. How many hydrogen atoms are there in octane?

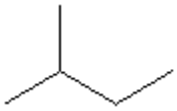
ANSWER: 18
POINTS: 1
QUESTION TYPE: Subjective Short Answer
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DATE MODIFIED: 3/12/2015 3:24 PM

87. What are the common and IUPAC names of the following compound?



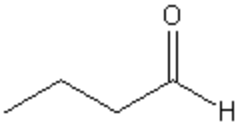
ANSWER: *common:* neopentane
IUPAC: 2,2-dimethylpropane
POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
DATE CREATED: 3/12/2015 3:24 PM
DATE MODIFIED: 3/12/2015 3:24 PM

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

89. What is the IUPAC name of the following compound?

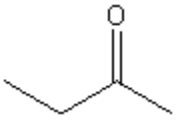


ANSWER: butanal
POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
DATE CREATED: 3/12/2015 3:24 PM
DATE MODIFIED: 3/12/2015 3:24 PM

90. What is the IUPAC name of the following compound?

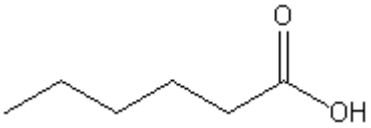
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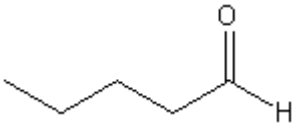
ANSWER: butanone
POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
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DATE MODIFIED: 3/12/2015 3:24 PM

91. Provide a line-bond structure of hexanoic acid.
ANSWER:



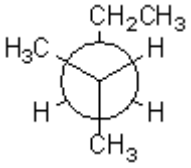
POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
DATE CREATED: 3/12/2015 3:24 PM
DATE MODIFIED: 3/12/2015 3:24 PM

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

93. Provide a Newman projection of the most stable conformation of 2-methylpentane, $(CH_3)_2CHCH_2CH_2CH_3$, looking along the C2-C3 bond
ANSWER:



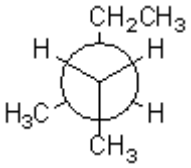
POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
DATE CREATED: 3/12/2015 3:24 PM
DATE MODIFIED: 3/10/2017 5:50 AM

94. Provide a Newman projection of the most stable conformation of 3-methylpentane, $CH_3CH_2CH(CH_3)CH_2CH_3$ looking along the C2-C3 bond.

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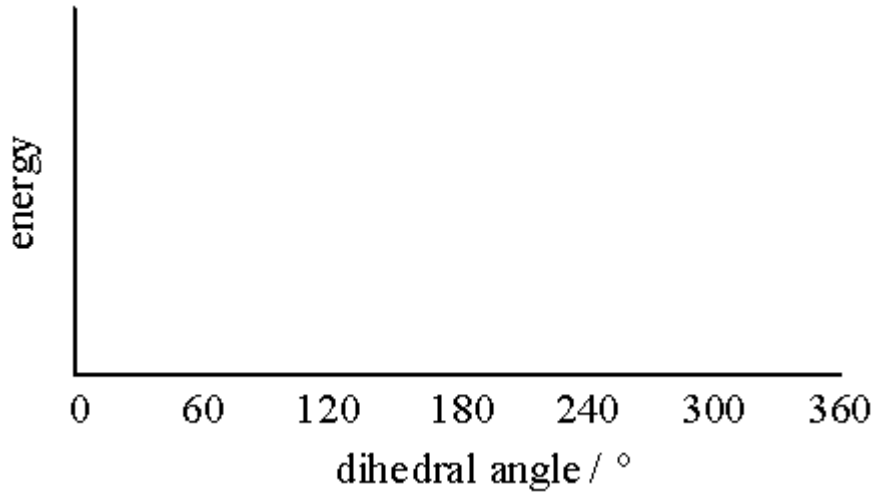
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ANSWER:

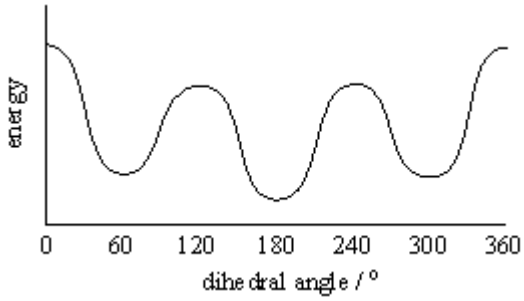


POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
DATE CREATED: 3/12/2015 3:24 PM
DATE MODIFIED: 3/12/2015 3:24 PM

95. Provide a neatly drawn plot of energy versus dihedral angle for rotation around the C2-C3 bond of butane.



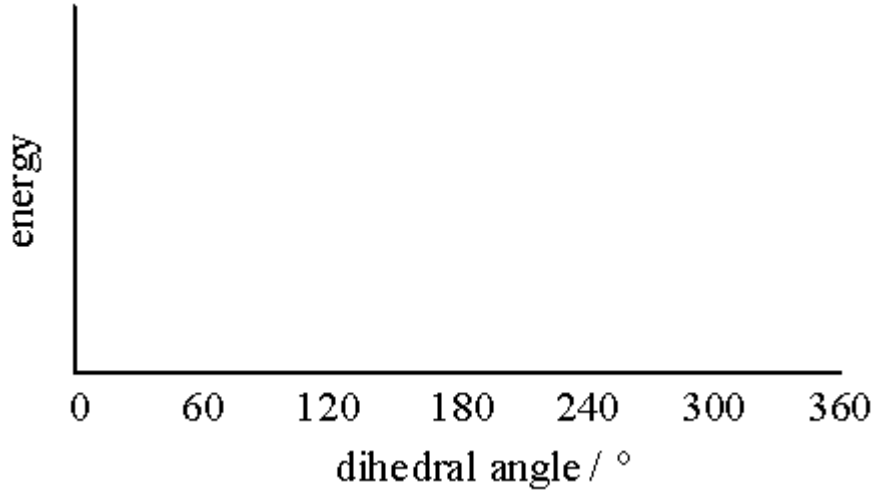
ANSWER:



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

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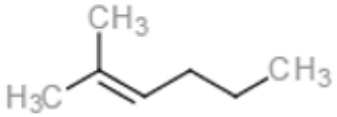


ANSWER:

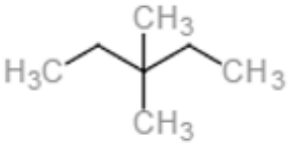


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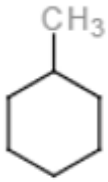
97. Identify the constitutional isomer with the molecular formula C_7H_{16}.



I



II



III

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

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DATE MODIFIED: 4/13/2017 1:02 AM

98. The molecular formulas of neopentane and isobutane are _____ and _____, respectively.

a. C_5H_{12}; C_4H_8

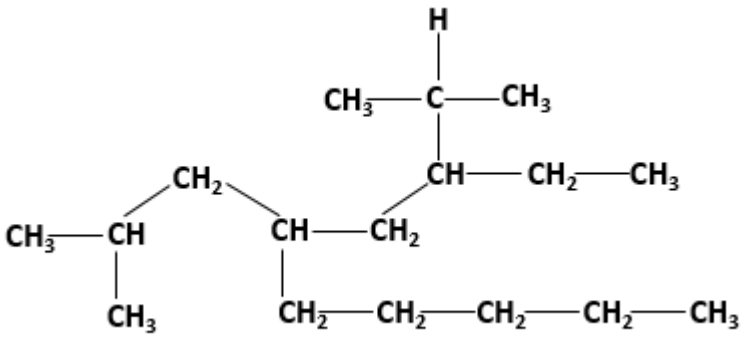
b. C_5H_{10}; C_4H_{10}

c. C_5H_{12}; C_4H_{11}

d. C_5H_{12}; C_4H_{10}

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

99. The total numbers of 2º and 3º carbon atoms in the following structure are _____ and _____, respectively.



a. 3; 7

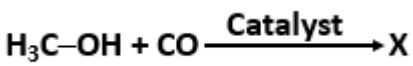
b. 7; 4

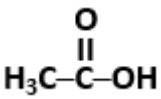
c. 4; 6

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

100. What is "X" in the following reaction?

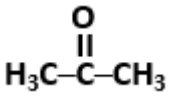


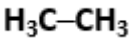
a. 

b. HC≡CH

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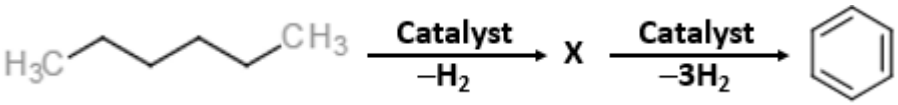
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c. 

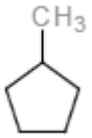
d. 

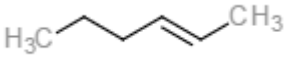
ANSWER: a
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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DATE MODIFIED: 4/11/2017 8:09 AM

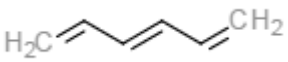
101. What is "X" in the following reaction?



a. 

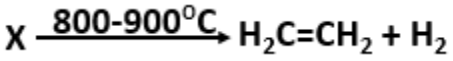
b. 

c. 

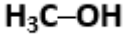
d. 

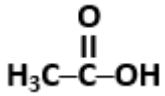
ANSWER: a
POINTS: 1
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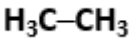
102. What is "X" in the following reaction?



a. 

b. 

c. 

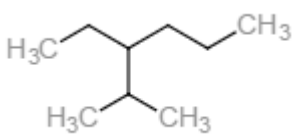
d. 

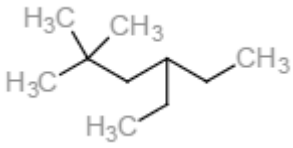
ANSWER: d

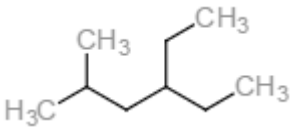
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POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
DATE CREATED: 4/11/2017 8:10 AM
DATE MODIFIED: 4/19/2017 12:56 AM

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

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

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

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

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