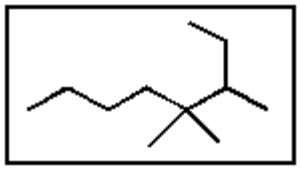
Organic Chemistry Structure and Function 8th edition Vollhardt Test Bank

SKU: 9781319079451-TEST-BANK

Name:_____ Class:_____ Date:_____

Chapter 2

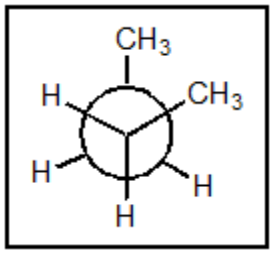
1. The correct name of the following molecule would be:



a. 2-ethyl-3,3-dimethylheptane
b. 6-ethyl-5,5-dimethylheptane
c. 3,4,4-trimethyloctane
d. 2-butyl-3-methylpentane
e. 2-sec-butyl-2-methylhexane

ANSWER: c

2. What is the name given to the Newman projection of the butane conformation shown here?



a. anti
b. gauche
c. staggered
d. eclipsed
e. skewed

ANSWER: b

3. At room temperature, the various conformations of butane
a. do not interconvert with only the *anti* form present.
b. do not interconvert, but all forms are present.
c. interconvert slowly.
d. interconvert rapidly.
e. There is no way to determine if interconversion occurs.

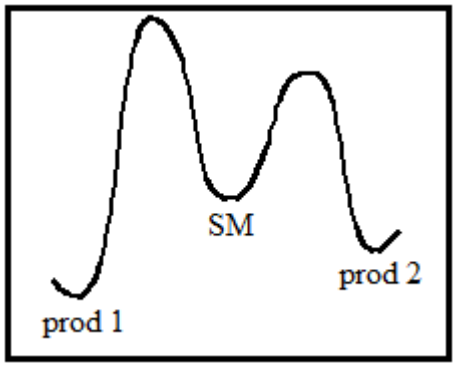
ANSWER: d

4. What statement is true of the following energy diagram?

Copyright Macmillan Learning. Powered by Cognero.

Organic Chemistry Structure and Function 8th edition Vollhardt Test Bank

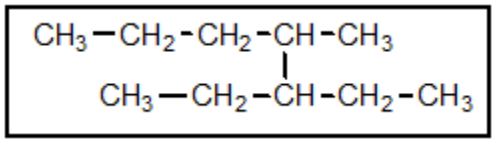
Chapter 2



a. For irreversible reactions, product 1 will dominate.
b. For reversible reactions, product 2 will dominate at equilibrium.
c. For reversible reactions, equal amounts of 1 and 2 will be formed.
d. For irreversible reactions, equal amounts of 1 and 2 will be formed.
e. None of the above are true.

ANSWER: e

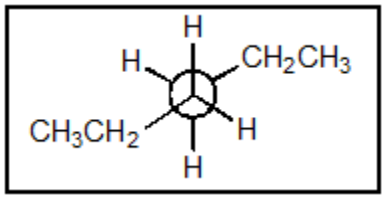
5. What would be the correct name of the following?



a. 3-(sec-pentyl)pentane
b. 5-ethyl-4-methylheptane
c. 3-(sec-butyl)hexane
d. 3-ethyl-4-methylheptane
e. 3-ethyl-4-propylpentane

ANSWER: d

6. The following Newman projection corresponds to which molecule?



a. pentane
b. butane
c. 3-ethylbutane
d. hexane
e. 3-methylpentane

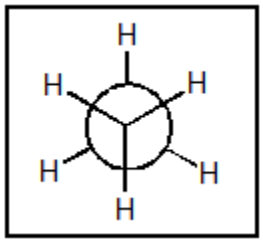
ANSWER: d

Copyright Macmillan Learning. Powered by Cognero.

Organic Chemistry Structure and Function 8th edition Vollhardt Test Bank

Chapter 2

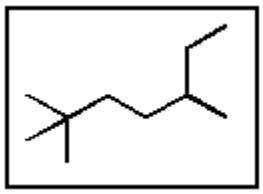
7. Rotation around the carbon-carbon bond of the molecule depicted by the following Newman projection requires how much energy?



a. 0 kcal/mol
b. 3 kcal/mol
c. 6 kcal/mol
d. 9 kcal/mol
e. 15 kcal/mol

ANSWER: b

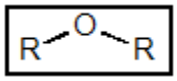
8. What is the correct IUPAC name for the following molecule?



a. 1,1,1,4-tetramethylhexane
b. 4-ethyl-1,1,1-trimethylpentane
c. 5-ethyl-2,2-dimethylhexane
d. 3,6,6,6-tetramethylhexane
e. 2,2,5-trimethylheptane

ANSWER: e

9. The following represents what functional group?



a. ester
b. ether
c. alcohol
d. thiol
e. ketone

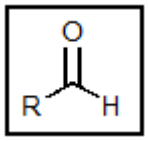
ANSWER: b

10. The following represents what functional group?

Copyright Macmillan Learning. Powered by Cognero.

Organic Chemistry Structure and Function 8th edition Vollhardt Test Bank

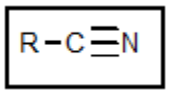
Chapter 2



a. alcohol
b. aldehyde
c. carboxylic acid
d. amide
e. ketone

ANSWER: b

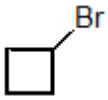
11. The following represents what functional group?

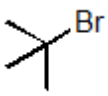


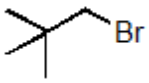
a. amide
b. thiol
c. ketone
d. nitrile
e. amine

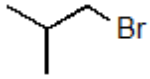
ANSWER: d

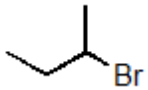
12. What is the correct structure for *tert*-butyl bromide?

a. 

b. 

c. 

d. 

e. 

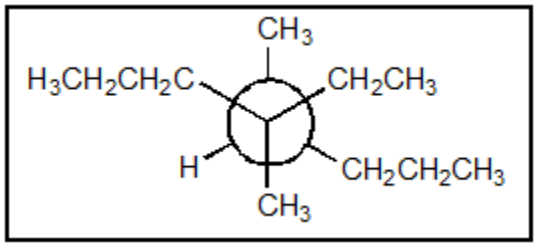
ANSWER: b

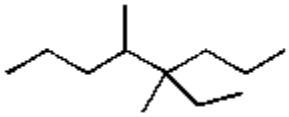
13. The following Newman projection represents which molecule?

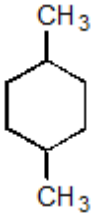
Copyright Macmillan Learning. Powered by Cognero.

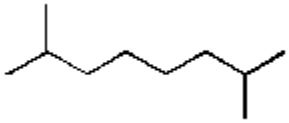
Organic Chemistry Structure and Function 8th edition Vollhardt Test Bank

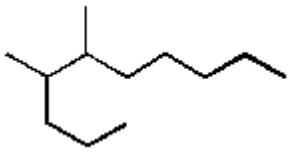
Chapter 2

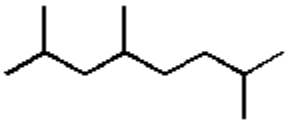


a. 

b. 

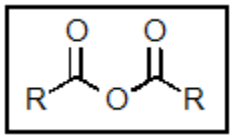
c. 

d. 

e. 

ANSWER: a

14. Name the following functional group:



a. ester
b. ketone
c. alcohol
d. carboxylic acid
e. anhydride

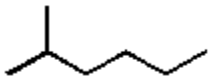
ANSWER: e

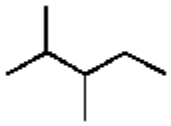
Copyright Macmillan Learning. Powered by Cognero.

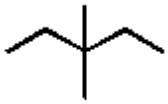
Organic Chemistry Structure and Function 8th edition Vollhardt Test Bank

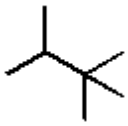
Chapter 2

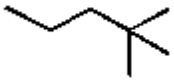
15. Which isomer of C_7H_{16} shown would have the highest boiling point?

a. 

b. 

c. 

d. 

e. 

ANSWER: a

16. Which of the following contains the isobutyl group?

a. $(CH_3)_2CHCH_2Cl$

b. $(CH_3)_3CCl$

c. $CH_3CH_2CH(CH_3)Cl$

d. $CH_3CH_2CH_2CH_2Cl$

e. None of the above.

ANSWER: a

17. Which of the following contains the *sec*-butyl group?

a. $(CH_3)_2CHCH_2Cl$

b. $(CH_3)_3CCl$

c. $CH_3CH_2CH(CH_3)Cl$

d. $CH_3CH_2CH_2CH_2Cl$

e. None of the above.

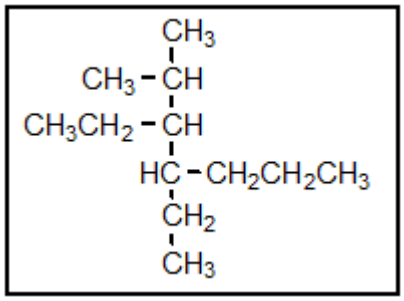
ANSWER: c

18. How would the following molecule be properly named?

Copyright Macmillan Learning. Powered by Cognero.

Organic Chemistry Structure and Function 8th edition Vollhardt Test Bank

Chapter 2



a. 3-ethyl-2-methyl-4-propylhexane
b. 3,4-diethyl-2-methylheptane
c. 4-ethyl-3-isopropylheptane
d. 3-isopropyl-4-propylhexane
e. None of the above.

ANSWER: b

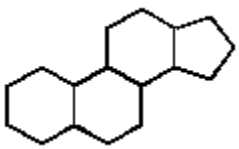
19. The IUPAC name for $[(CH_3)_3C]_2CHCH_3$ is:
a. 1,1-di-*tert*-butylethane
b. 3-*tert*-butyl-2,2-dimethylbutane
c. 2,2,3,4,4-pentamethylpentane
d. 2,4,4-trimethylheptane
e. None of the above.

ANSWER: c

20. What is the smallest alkane that is liquid at room temperature?
a. propane
b. butane
c. pentane
d. hexane
e. All are liquids.

ANSWER: c

21. All steroids are derivatives of the ring system shown. How many **tertiary hydrogens** are in this ring system?



a. none
b. 2
c. 4
d. 5

Copyright Macmillan Learning. Powered by Cognero.

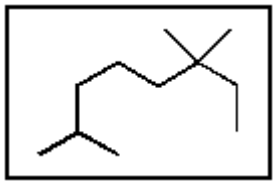
Organic Chemistry Structure and Function 8th edition Vollhardt Test Bank

Chapter 2

e. 6

ANSWER: e

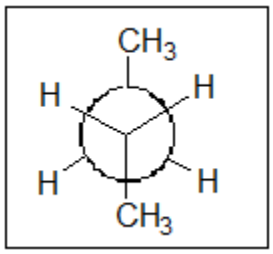
22. What is the correct IUPAC name for the following molecule:



a. 2-ethyl-2,6-dimethylheptane
b. 1,1,5,5-tetramethylhexane
c. 1,1,5,5-tetramethylheptane
d. 2,6,6-trimethyloctane
e. 4,4-dimethyl-1-isopropylhexane

ANSWER: d

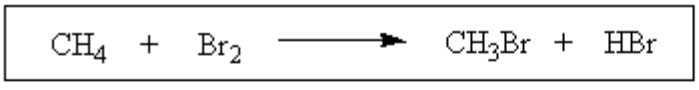
23. What is the name given to the Newman projection of the butane conformation shown here?



a. eclipsed
b. gauche
c. staggered
d. anti
e. skewed

ANSWER: d

24. Calculate ΔG^o for the following reaction at 25 ^oC and $\Delta S=0$



Bond	Ave Strength
C-C	83 (kcal/mol)
C-H	99 (kcal/mol)
C-Br	68 (kcal/mol)
H-Br	87 (kcal/mol)
Br-Br	46 (kcal/mol)

Copyright Macmillan Learning. Powered by Cognero.

Organic Chemistry Structure and Function 8th edition Vollhardt Test Bank

Chapter 2

a. –10 kcal/mol
b. 10 kcal/mol
c. 34 kcal/mol
d. –34 kcal/mol
e. None of the above.

ANSWER: a

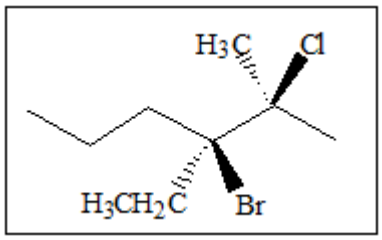
25. Which of the following has the highest pKa?
a. HI
b. NH_3
c. HNO_3
d. CH_3COOH
e. H_2SO_4

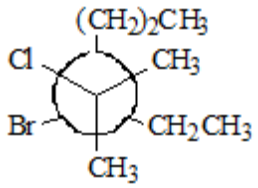
ANSWER: b

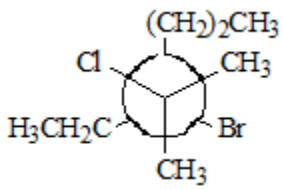
26. The common name for 1-methylpropyl is:
a. Isopropyl
b. Isobutyl
c. *sec*-Butyl
d. *tert*-Butyl
e. None of the above.

ANSWER: c

27. What is the correct Newman projection for the following molecule?



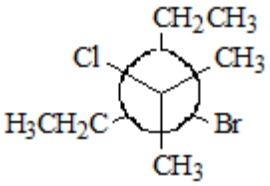
a.


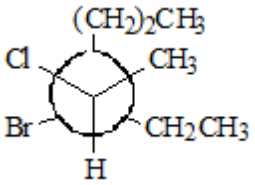
b.


Copyright Macmillan Learning. Powered by Cognero.

Organic Chemistry Structure and Function 8th edition Vollhardt Test Bank

Chapter 2

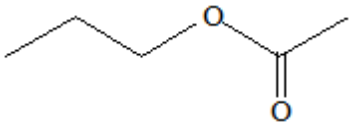
c. 

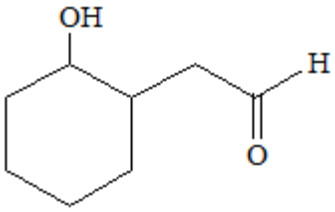
d. 

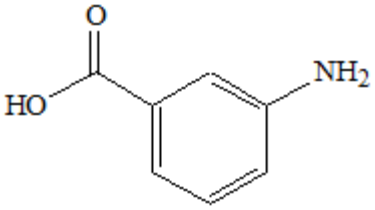
e. None of the above.

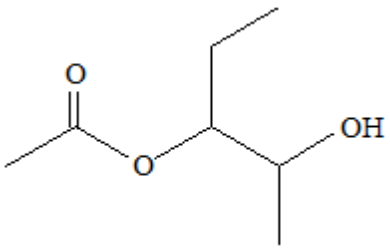
ANSWER: a

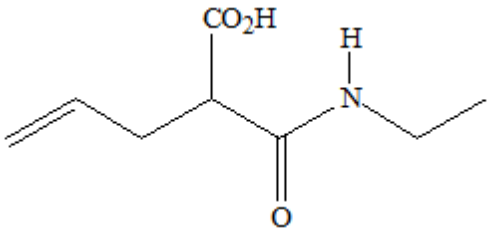
28. Which of the following molecules contain both an alcohol and an aldehyde functional group?

a. 

b. 

c. 

d. 

e. 

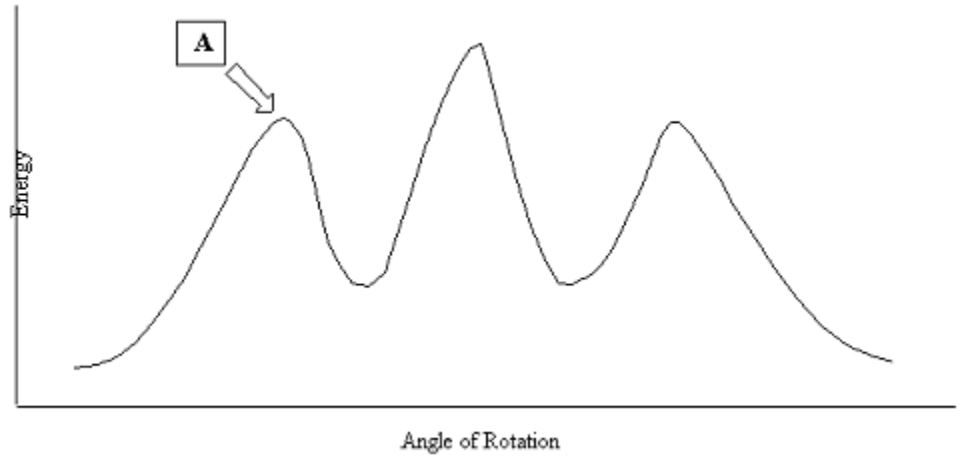
ANSWER: b

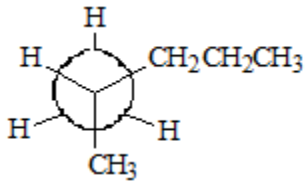
Copyright Macmillan Learning. Powered by Cognero.

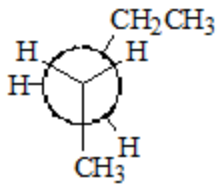
Organic Chemistry Structure and Function 8th edition Vollhardt Test Bank

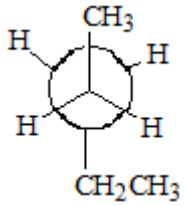
Chapter 2

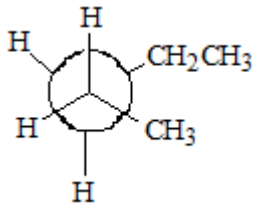
29. Consider the potential energy diagram for rotation about the C2–C3 bond in pentane. The position marked "A" most likely corresponds to which of the following Newman projections?

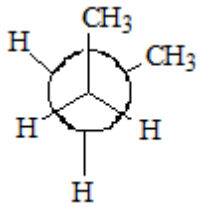


a.


b.


c.


d.


e.


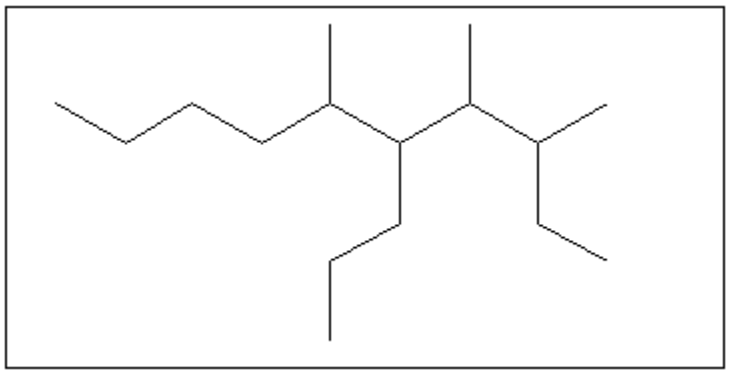
ANSWER: b

30. What is the correct IUPAC name for the following molecule?

Copyright Macmillan Learning. Powered by Cognero.

Organic Chemistry Structure and Function 8th edition Vollhardt Test Bank

Chapter 2



a. 6-propyl-5,7,8-trimethyldecane
b. 5,7,8-trimethyl-6-propyldecane
c. 3,4,6-trimethyl-5-propyldecane
d. 5-propyl-3,4,6-trimethyldecane
e. None of the above.

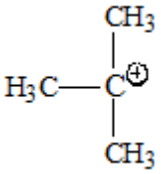
ANSWER: c

31. Which of the following is not considered a Lewis acid?

a. 

b. CH_3OH

c. $AlCl_3$

d. 

e. BF_3

ANSWER: b

32. Which of the following is considered to be a nucleophile?

a. CH_3Cl

b. CH_3CH_2I

c. 

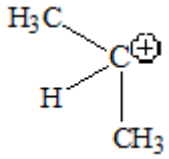
d. 

e.

Copyright Macmillan Learning. Powered by Cognero.

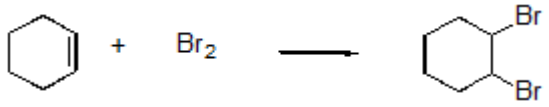
Organic Chemistry Structure and Function 8th edition Vollhardt Test Bank

Chapter 2

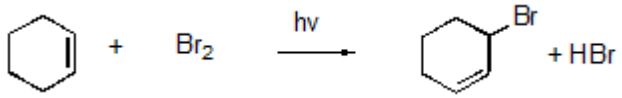


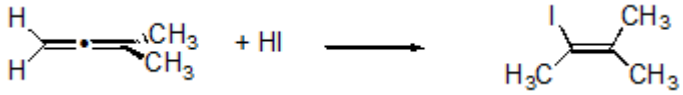
ANSWER: c

33. Which of the following reactions has a $\Delta S = 0$?

a. 

b. $CH_3CH_2Cl + NaOH \rightarrow CH_2{=}CH_2 + H_2O + NaCl$

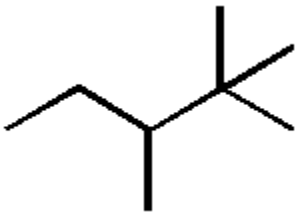
c. 

d. 

e. None of the above.

ANSWER: c

34. How many quaternary carbons are in the following molecule?



a. 0
b. 1
c. 2
d. 3
e. 4

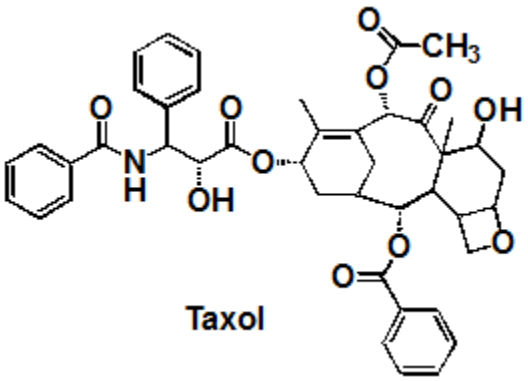
ANSWER: b

35. How many ester functional groups are in the potent anticancer compound Taxol?

Copyright Macmillan Learning. Powered by Cognero.

Organic Chemistry Structure and Function 8th edition Vollhardt Test Bank

Chapter 2



Taxol

a. 0
b. 1
c. 2
d. 3
e. 4

ANSWER: d

36. Arrange these acids in the order of increasing acidity.

HCl HBr HI HF

a. HBr, HI, HF, HCl
b. HF, HCl, HBr, HI
c. HF, HBr, HCl, HI
d. HI, HCl, HBr, HF
e. HI, HBr, HCl, HF

ANSWER: b

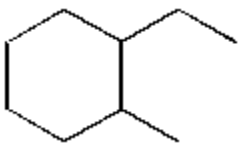
37. Arrange these acids in the order of increasing acidity.

CH_4 H_2O HF NH_3

a. CH_4, H_2O, HF, NH_3
b. HF, H_2O, CH_4, NH_3
c. HF, H_2O, NH_3, CH_4,
d. CH_4, NH_3, H_2O, HF,
e. NH_3, CH_4, H_2O, HF,

ANSWER: d

38. What is the correct IUPAC name for the following molecule?



a. 1-ethyl-2-methylhexane
b. 2-ethyl-1-methylcycloheptane

Copyright Macmillan Learning. Powered by Cognero.

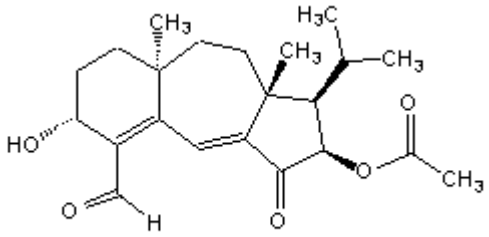
Organic Chemistry Structure and Function 8th edition Vollhardt Test Bank

Chapter 2

c. 4-ethyl-5-methylcyclohexane
d. 1-ethyl-2-methylcyclohexane
e. 1-methyloctane

ANSWER: d

39. Guanacastepene is a natural product that was recently isolated and shown to be a potent antibiotic. How many **different** functional groups does this structure possess?



Guanacastepene

a. 1
b. 2
c. 3
d. 4
e. 5

ANSWER: e

Copyright Macmillan Learning. Powered by Cognero.

Organic Chemistry Structure and Function 8th edition Vollhardt Test Bank