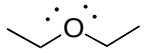
Chapter 2

Topic: Molecular Representations
Section: 2.1
Difficulty Level: Easy

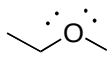
1. What is the molecular formula for the following structure?



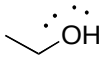
A. C_2H_6O
B. C_4H_6O
C. $C_4H_{10}O$
D. C_2H_4O
Ans: C

Topic: Molecular Representations
Section: 2.1
Difficulty Level: Easy

2. Which of the following structures is of a compound with a molecular formula of C_2H_6O?



1



2

$CH_3CH_2OCH_2CH_3$

3

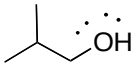
$CH_3CH_2OCH_3$

4

A. 1
B. 2
C. 3
D. 4
Ans: B

Topic: Molecular Representations
Section: 2.1
Difficulty Level: Easy

3. Which of the following is the correct condensed structure for the following structure?



CH_3CHCH_2OH

1

$(CH_3)_2CHCH_2OH$

2

$CH_3CH_2OCH_2CH_3$

3

CH_3CH_2O

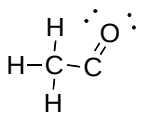
4

A. 1
B. 2
C. 3
D. 4

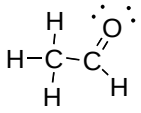
Ans: B

Topic: Molecular Representations
Section: 2.1
Difficulty Level: Easy

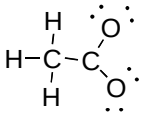
4. Which of the following is the correct Lewis structure for the following structure?



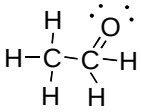
1



2



3



4

A. 1
B. 2
C. 3
D. 4
Ans: B

Topic: Molecular Representations
Section: 2.1
Difficulty Level: Easy

5. Which of the following is the correct bond-line structure for $(CH_3)_4C$?

1

2

3

4

A. 1
B. 2
C. 3
D. 4
Ans: C

Topic: Molecular Representations
Section: 2.1
Difficulty Level: Medium

6. Draw the bond-line structure for $(CH_3)_4C$?

Ans: 

Topic: Molecular Representations

Section: 2.1
Difficulty Level: Easy

7. Which of the following is the correct molecular formula for $(CH_3)_4C$?

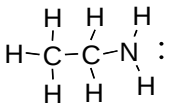
C_2H_{12} C_5H_{12} C_4H_{12} C_3H_9

1 2 3 4

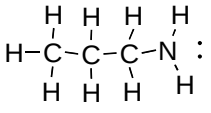
A. 1
B. 2
C. 3
D. 4
Ans: B

Topic: Molecular Representations
Section: 2.1
Difficulty Level: Easy

8. Which of the following is the correct Lewis structure for $CH_3CH_2CH_2NH_2$?



1



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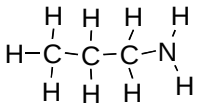

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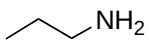
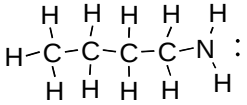


4

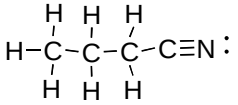
A. 1
B. 2
C. 3
D. 4
Ans: B

Topic: Molecular Representations
Section: 2.1
Difficulty Level: Easy

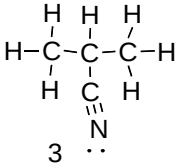
9. Which of the following is a valid Lewis structure for a compound with the molecular formula of $C_4H_{11}N$?



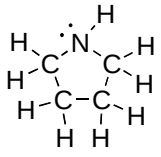
1



2



3



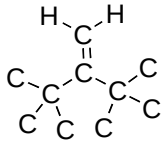
4

A. 1
B. 2
C. 3
D. 4
Ans: A

Topic: Molecular Representations

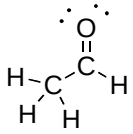
Section: 2.1
Difficulty Level: Medium

10. Draw a valid Lewis structure for the following compound.

Ans: 

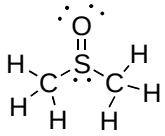
Topic: Molecular Representations
Section: 2.1
Difficulty Level: Hard

11. Draw a valid Lewis structure for the following compound.
H_3CCOH

Ans: 

Topic: Molecular Representations
Section: 2.1
Difficulty Level: Hard

12. Draw a valid Lewis structure for the following compound.
H_3CSOCH_3

Ans: 

Topic: Bond-Line Structures
Section: 2.2
Difficulty Level: Easy

13. Which of the following bond-line structures are of the same compound?

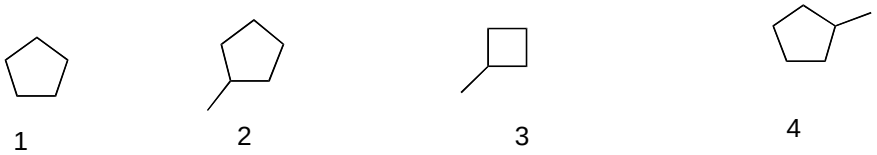
1 2 3 4

A. 1 and 2
B. 2 and 3
C. 3 and 4
D. 1 and 3

Ans: D

Topic: Bond-Line Structures
Section: 2.2
Difficulty Level: Easy

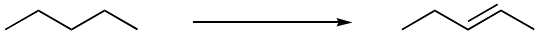
14. Which of the following bond-line structures are of the same compound?



A. 1 and 2
B. 2 and 3
C. 3 and 4
D. 2 and 4
Ans: D

Topic: Bond-Line Structures
Section: 2.2
Difficulty Level: Easy

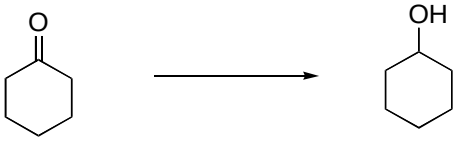
15. In the following reaction, how many H's do you add or lose?



A. Add 1
B. Add 2
C. Lose 1
D. Lose 2
E. No change
Ans: D

Topic: Bond-Line Structures
Section: 2.2
Difficulty Level: Easy

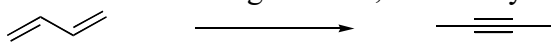
16. In the following reaction, how many H's do you add or lose?



A. Add 1
B. Add 2
C. Lose 1
D. Lose 2
E. No change
Ans: B

Topic: Bond-Line Structures
Section: 2.2
Difficulty Level: Medium

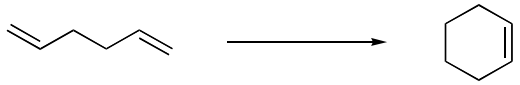
17. In the following reaction, how many H's do you add or lose?



A. Add 1
B. Add 2
C. Lose 1
D. No change
Ans: D

Topic: Bond-Line Structures
Section: 2.2
Difficulty Level: Medium

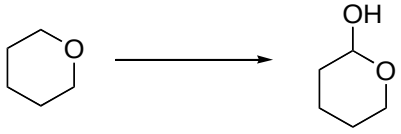
18. In the following reaction, how many H's do you add or lose?



A. Add 1
B. Add 2
C. Lose 1
D. No change
Ans: D

Topic: Bond-Line Structures
Section: 2.2
Difficulty Level: Easy

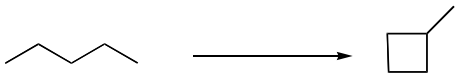
19. In the following reaction, how many H's do you add or lose?



A. Add 1
B. Add 2
C. Lose 1
D. No change
Ans: D

Topic: Bond-Line Structures
Section: 2.2
Difficulty Level: Easy

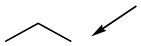
20. In the following reaction, how many H's do you add or lose?



A. Add 1
B. Add 2
C. Lose 1
D. Lose 2
Ans: D

Topic: Bond-Line Structures
Section: 2.2
Difficulty Level: Easy

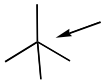
21. How many H's are on the indicated carbon?



A. 1
B. 2
C. 3
D. 4
Ans: C

Topic: Bond-Line Structures
Section: 2.2
Difficulty Level: Easy

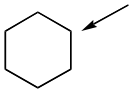
22. How many H's are on the indicated carbon?



A. 1
B. 2
C. 3
D. 0
Ans: D

Topic: Bond-Line Structures
Section: 2.2
Difficulty Level: Easy

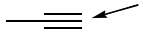
23. How many H's are on the indicated carbon?



A. 1
B. 2
C. 3
D. 4
Ans: B

Topic: Bond-Line Structures
Section: 2.2
Difficulty Level: Medium

24. How many H's are on the indicated carbon?



A. 1
B. 2
C. 3
D. 4
Ans: A

Topic: Bond-Line Structures
Section: 2.2
Difficulty Level: Medium

25. How many H's are on the indicated carbon?

A. 1
B. 2
C. 3
D. 0
Ans: D

Topic: Bond-Line Structures
Section: 2.2
Difficulty Level: Medium

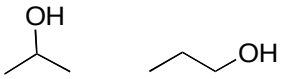
26. Convert $(CH_3CH_2CH_2)_2$ into a bond-line structure.
Ans: 

Topic: Bond-Line Structures
Section: 2.2
Difficulty Level: Hard

27. Draw bond-line structure for all of the isomers with a molecular formula of C_2H_4O.
Ans: 

Topic: Bond-Line Structures
Section: 2.2
Difficulty Level: Hard

28. Draw bond-line structure for all of the isomers with a molecular formula of C_3H_8O.

Ans: 

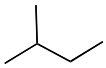
Topic: Bond-Line Structures
Section: 2.2
Difficulty Level: Hard

29. Draw a line-bond structure for a compound with a molecular formula of C_4H_{12} and one carbon with no hydrogens attached to it.

Ans: 

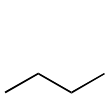
Topic: Bond-Line Structures
Section: 2.2
Difficulty Level: Hard

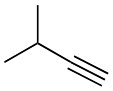
30. Draw a line-bond structure for a compound with a molecular formula of C_5H_{14} and one carbon with only one hydrogen attached to it.

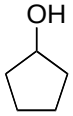
Ans: 

Topic: Identifying Functional Groups
Section: 2.3
Difficulty Level: Easy

31. Which of the following structures contains an alcohol?


1


2



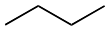
3

4

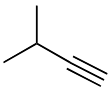
A. 1
B. 2
C. 3
D. 4
Ans: C

Topic: Identifying Functional Groups
Section: 2.3
Difficulty Level: Easy

32. Which of the following structures contains an alkene?



1



2

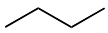
3

4

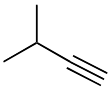
A. 1
B. 2
C. 3
D. 4
Ans: C

Topic: Identifying Functional Groups
Section: 2.3
Difficulty Level: Easy

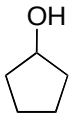
33. Which of the following structures contains an amine?



1



2



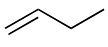
3

4

A. 1
B. 2
C. 3
D. 4
Ans: D

Topic: Identifying Functional Groups
Section: 2.3
Difficulty Level: Easy

34. Which of the following structures contains a ketone?



1

2

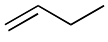
3

4

A. 1
B. 2
C. 3
D. 4
Ans: B

Topic: Identifying Functional Groups
Section: 2.3
Difficulty Level: Easy

35. Which of the following structures contains an aromatic ring?



1

2

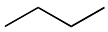
3

4

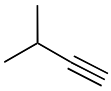
A. 1
B. 2
C. 3
D. 4
Ans: D

Topic: Identifying Functional Groups
Section: 2.3
Difficulty Level: Easy

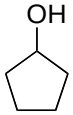
36. Which of the following structures contains an alkyne?



1



2



3

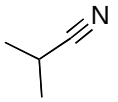
4

A. 1
B. 2
C. 3
D. 4
Ans: B

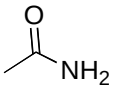
Topic: Identifying Functional Groups
Section: 2.3
Difficulty Level: Easy

37. Which of the following structures contains a nitrile?

2

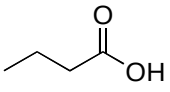


1



2

3

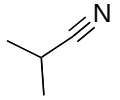


4

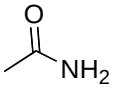
A. 1
B. 2
C. 3
D. 4
Ans: A

Topic: Identifying Functional Groups
Section: 2.3
Difficulty Level: Easy

38. Which of the following structures contains an amide?



1



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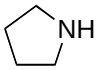
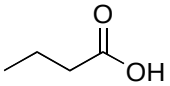


3



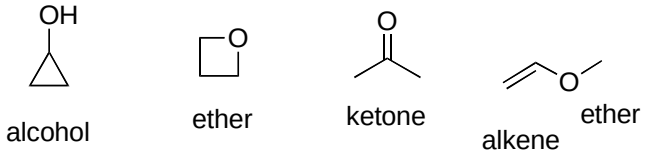
4

A. 1
B. 2
C. 3
D. 4
Ans: B

Topic: Identifying Functional Groups
Section: 2.3
Difficulty Level: Hard

39. Draw all the isomers with a molecular formula of C_3H_6O and label all the functional groups.

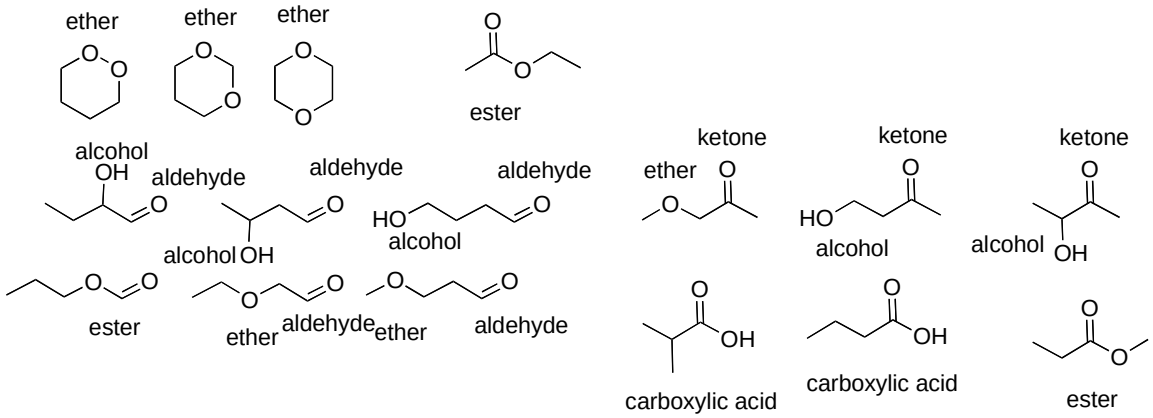
Ans:



Topic: Identifying Functional Groups
Section: 2.3
Difficulty Level: Hard

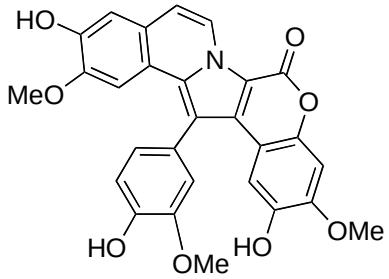
40. Draw the isomers with a molecular formula of $C_4H_8O_2$ and label the functional groups.

Ans:

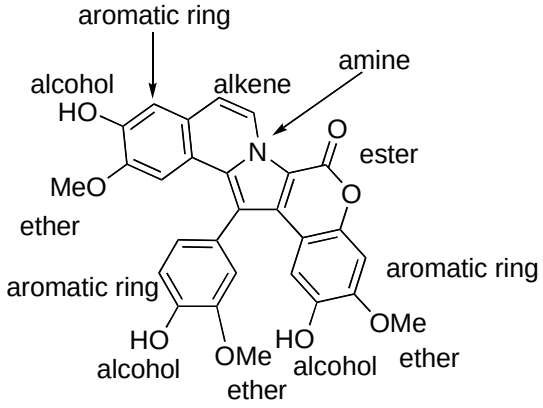


Topic: Identifying Functional Groups
Section: 2.3
Difficulty Level: Hard

41. Identify the functional groups in the following compound.

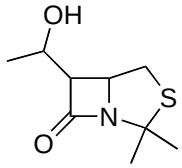


Ans:

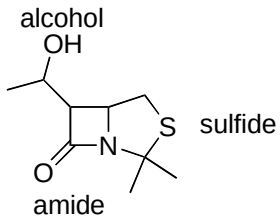


Topic: Identifying Functional Groups
Section: 2.3
Difficulty Level: Hard

42. Identify the functional groups in the following compound.

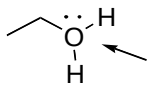


Ans:



Topic: Formal Charges
Section: 2.4
Difficulty Level: Easy

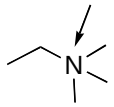
43. Calculate the formal charge on the indicated atom.



A. +1
B. +2
C. -1
D. -2
Ans: A

Topic: Formal Charges
Section: 2.4
Difficulty Level: Easy

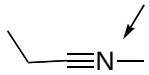
44. Calculate the formal charge on the indicated atom.



A. +1
B. +2
C. -1
D. -2
Ans: A

Topic: Formal Charges
Section: 2.4
Difficulty Level: Easy

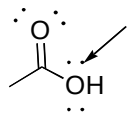
45. Calculate the formal charge on the indicated atom.



A. +1
B. +2
C. -1
D. -2
Ans: A

Topic: Formal Charges
Section: 2.4
Difficulty Level: Easy

46. Calculate the formal charge on the indicated atom.



A. +1
B. +2
C. -1
D. 0
Ans: D

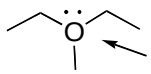
Topic: Formal Charges
Section: 2.4
Difficulty Level: Easy

47. Calculate the formal charge on the indicated atom.

A. +1
B. +2
C. -1
D. 0
Ans: D

Topic: Formal Charges
Section: 2.4
Difficulty Level: Easy

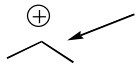
48. Calculate the formal charge on the indicated atom.



A. +1
B. +2
C. -1
D. -2
Ans: A

Topic: Formal Charges
Section: 2.4
Difficulty Level: Easy

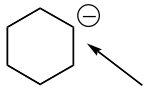
49. Determine the number of hydrogens on the indicated atom.



A. 1
B. 2
C. 3
D. 4
Ans: A

Topic: Formal Charges
Section: 2.4
Difficulty Level: Easy

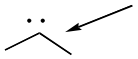
50. Determine the number of hydrogens on the indicated atom.



A. 1
B. 2
C. 3
D. 4
Ans: A

Topic: Formal Charges
Section: 2.4
Difficulty Level: Easy

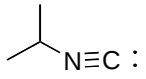
51. Determine the number of hydrogens on the indicated atom.



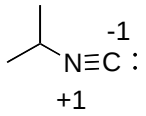
A. 1
B. 2
C. 3
D. 0
Ans: D

Topic: Formal Charges
Section: 2.4
Difficulty Level: Medium

52. Determine the formal charges on every atom in the following structure.

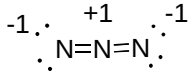


Ans:



Topic: Formal Charges
Section: 2.4
Difficulty Level: Hard

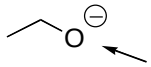
53. Draw a valid Lewis structure, with all lone pairs and formal charges for the azide anion (N_3^-).
Ans:



Topic: Identifying Lone Pairs
Section: 2.5

Difficulty Level: Easy

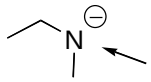
54. Determine the number of lone pairs of electrons on the indicated atom.



A. 1
B. 2
C. 3
D. 4
Ans: C

Topic: Identifying Lone Pairs
Section: 2.5
Difficulty Level: Easy

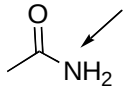
55. Determine the number of lone pairs of electrons on the indicated atom.



A. 1
B. 2
C. 3
D. 4
Ans: B

Topic: Identifying Lone Pairs
Section: 2.5
Difficulty Level: Easy

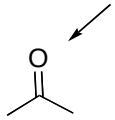
56. Determine the number of lone pairs of electrons on the indicated atom.



A. 1
B. 2
C. 3
D. 4
Ans: A

Topic: Identifying Lone Pairs
Section: 2.5
Difficulty Level: Easy

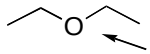
57. Determine the number of lone pairs of electrons on the indicated atom.



A. 1
B. 2
C. 3
D. 4
Ans: B

Topic: Identifying Lone Pairs
Section: 2.5
Difficulty Level: Easy

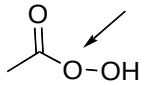
58. Determine the number of lone pairs of electrons on the indicated atom.



A. 1
B. 2
C. 3
D. 4
Ans: B

Topic: Identifying Lone Pairs
Section: 2.5
Difficulty Level: Easy

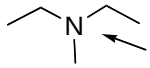
59. Determine the number of lone pairs of electrons on the indicated atom.



A. 1
B. 2
C. 3
D. 4
Ans: B

Topic: Identifying Lone Pairs
Section: 2.5
Difficulty Level: Easy

60. Determine the number of lone pairs of electrons on the indicated atom.

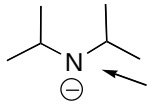


A. 1
B. 2
C. 3
D. 4
Ans: A

Topic: Identifying Lone Pairs
Section: 2.5

Difficulty Level: Easy

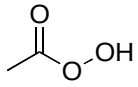
61. Determine the number of lone pairs of electrons on the indicated atom.



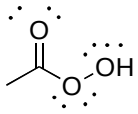
A. 1
B. 2
C. 3
D. 4
Ans: B

Topic: Lone Pairs
Section: 2.5
Difficulty Level: Medium

62. Draw all of the lone pairs on the following compound.

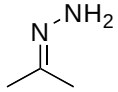


Ans:

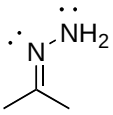


Topic: Lone Pairs
Section: 2.5
Difficulty Level: Medium

63. Draw all of the lone pairs on the following compound.

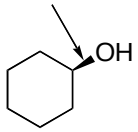


Ans:



Topic: Three-Dimensional Bond-line Structures
Section: 2.6
Difficulty Level: Easy

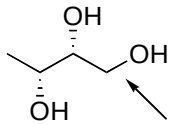
64. For the following compound, is the indicated bond up or down?



A. Up
B. Down
Ans: A

Topic: Three-Dimensional Bond-line Structures
Section: 2.6
Difficulty Level: Easy

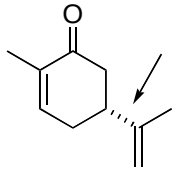
65. For the following compound, is the indicated bond up or down?



A. Up
B. Down
C. Neither
Ans: C

Topic: Three-Dimensional Bond-line Structures
Section: 2.6
Difficulty Level: Easy

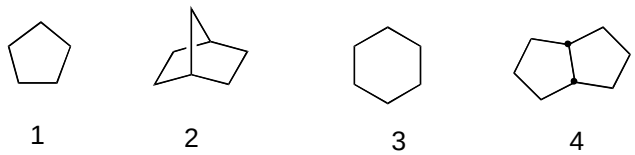
66. For the following compound, is the indicated bond up or down?



A. Up
B. Down
C. Neither
Ans: B

Topic: Three-Dimensional Bond-line Structures
Section: 2.6
Difficulty Level: Easy

67. Which of the following structures is the same as structure A?

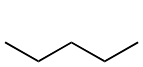


A. 1
B. 2

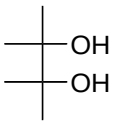
C. 3
D. 4
Ans: B

Topic: Three-Dimensional Bond-line Structures
Section: 2.6
Difficulty Level: Easy

68. Which of the following structures is a Fischer projection?



1



2

3

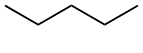
$C_6H_{12}O_6$

4

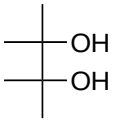
A. 1
B. 2
C. 3
D. 4
Ans: B

Topic: Three-Dimensional Bond-line Structures
Section: 2.6
Difficulty Level: Easy

69. Which of the following structures is a Haworth projection?



1



2

3

$C_6H_{12}O_6$

4

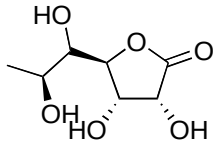
A. 1
B. 2
C. 3
D. 4
Ans: C

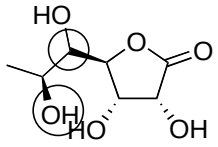
Topic: Three-Dimensional Bond-line Structures
Section: 2.6
Difficulty Level: Medium

70. Draw an example of a Fischer projection.
Ans: many!

Topic: Three-Dimensional Bond-line Structures
Section: 2.6
Difficulty Level: Medium

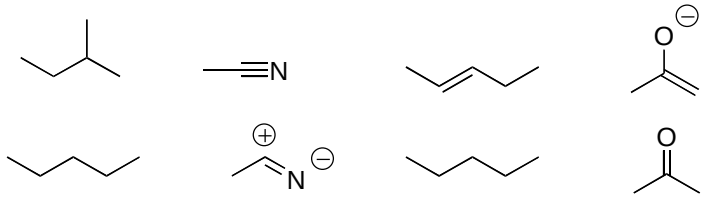
71. Circle the atoms which are pointing up in the following compound.



Ans: 

Topic: Introduction to Resonance
Section: 2.7
Difficulty Level: Easy

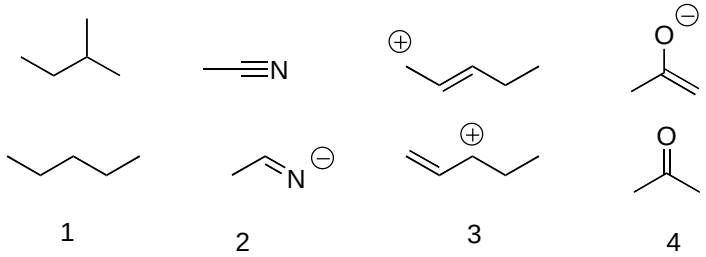
72. Which of the following pairs of structures are resonance structures?



A. 1
B. 2
C. 3
D. 4
Ans: B

Topic: Introduction to Resonance
Section: 2.7
Difficulty Level: Easy

73. Which of the following pairs of structures are resonance structures?



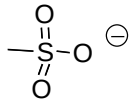
A. 1
B. 2
C. 3
D. 4
Ans: C

Topic: Introduction to Resonance
Section: 2.7
Difficulty Level: Hard

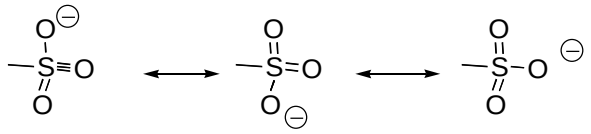
74. When do we use resonance structures?
Ans: When the structure of a compound cannot be adequately described by one single structure.

Topic: Introduction to Resonance
Section: 2.7
Difficulty Level: Hard

75. Draw all valid resonance structures for the following anion.

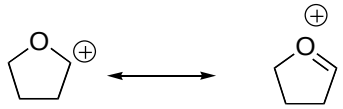


Ans:

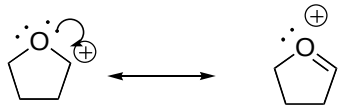


Topic: Curved Arrows
Section: 2.8
Difficulty Level: Medium

76. Draw in the appropriate arrows for the following resonance pairs.

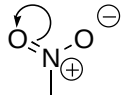


Ans:



Topic: Curved Arrows
Section: 2.8
Difficulty Level: Easy

77. In the following structure, the arrow indicates that electrons are moving to what atom?



A. C
B. O

C. H
D. N
Ans: B

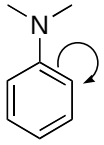
Topic: Curved Arrows
Section: 2.8
Difficulty Level: Easy

78. In the following structure, the arrow indicates that electrons are moving to what atom?

A. C
B. O
C. H
D. N
Ans: B

Topic: Curved Arrows
Section: 2.8
Difficulty Level: Easy

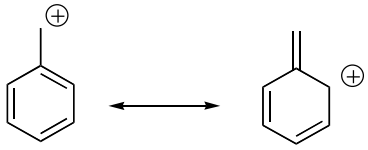
79. In the following structure, the arrow indicates that electrons are moving to what atom?



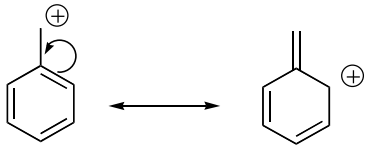
A. C
B. O
C. H
D. N
Ans: A

Topic: Curved Arrows
Section: 2.8
Difficulty Level: Hard

80. Draw in the appropriate arrows for the following resonance pairs.

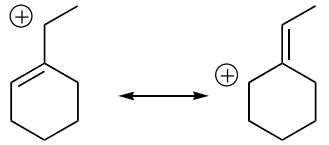


Ans:

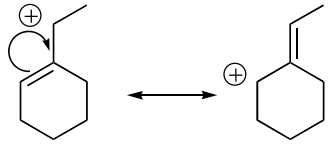


Topic: Curved Arrows
Section: 2.8
Difficulty Level: Hard

81. Draw in the appropriate arrows for the following resonance pairs.

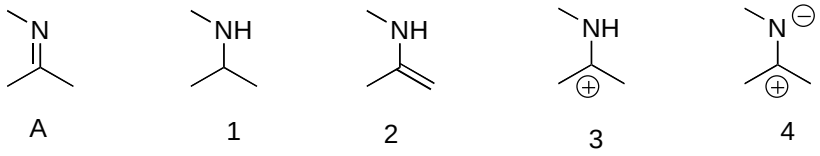


Ans:



Topic: Formal Charges in Resonance Structures
Section: 2.9
Difficulty Level: Easy

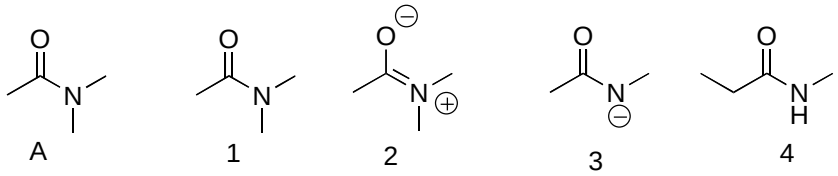
82. Which of the following is a correct resonance structure of A?



A. 1
B. 2
C. 3
D. 4
Ans: D

Topic: Formal Charges in Resonance Structures
Section: 2.9
Difficulty Level: Easy

83. Which of the following is a correct resonance structure of A?

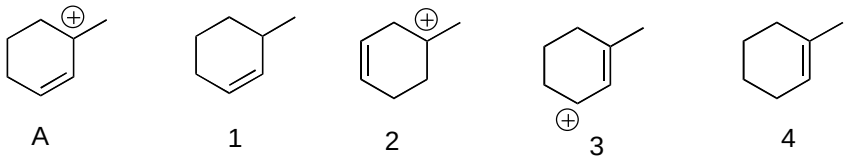


A. 1

B. 2
C. 3
D. 4
Ans: B

Topic: Formal Charges in Resonance Structures
Section: 2.9
Difficulty Level: Easy

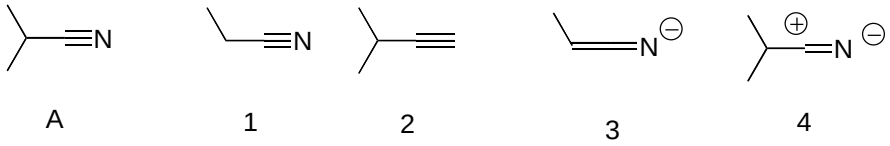
84. Which of the following is a correct resonance structure of A?



A. 1
B. 2
C. 3
D. 4
Ans: C

Topic: Formal Charges in Resonance Structures
Section: 2.9
Difficulty Level: Easy

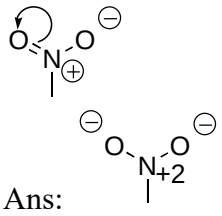
85. Which of the following is a correct resonance structure of A?



A. 1
B. 2
C. 3
D. 4
Ans: D

Topic: Formal Charges in Resonance Structures
Section: 2.9
Difficulty Level: Medium

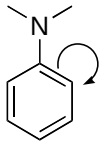
86. Draw the resonance structure that is indicated by the following arrows.



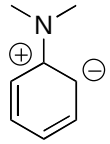
Ans:

Topic: Formal Charges in Resonance Structures
Section: 2.9
Difficulty Level: Medium

87. Draw the resonance structure that is indicated by the following arrows.

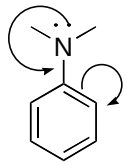


Ans:

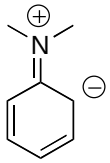


Topic: Formal Charges in Resonance Structures
Section: 2.9
Difficulty Level: Medium

88. Draw the resonance structure that is indicated by the following arrows.

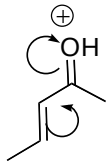


Ans:

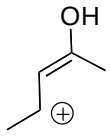


Topic: Formal Charges in Resonance Structures
Section: 2.9
Difficulty Level: Medium

89. Draw the resonance structure that is indicated by the following arrows.

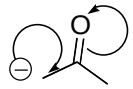


Ans:

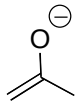


Topic: Formal Charges in Resonance Structures
Section: 2.9
Difficulty Level: Medium

90. Draw the resonance structure that is indicated by the following arrows.

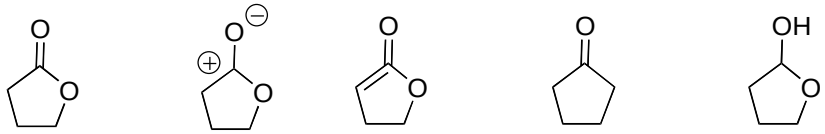


Ans:



Topic: Pattern Recognition
Section: 2.10
Difficulty Level: Easy

91. Which of the following is a correct resonance structure of A?

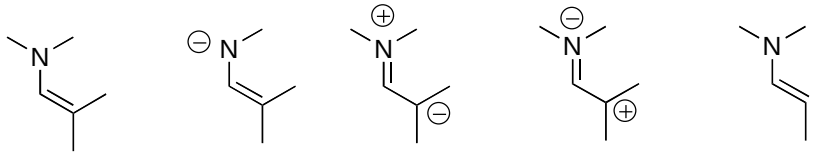


A 1 2 3 4

A. 1
B. 2
C. 3
D. 4
Ans: A

Topic: Pattern Recognition
Section: 2.10
Difficulty Level: Easy

92. Which of the following is a correct resonance structure of A?

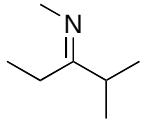


A 1 2 3 4

A. 1
B. 2
C. 3
D. 4
Ans: B

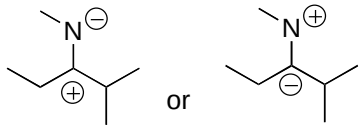
Topic: Pattern Recognition
Section: 2.10
Difficulty Level: Medium

93. Draw a resonance structure of A.



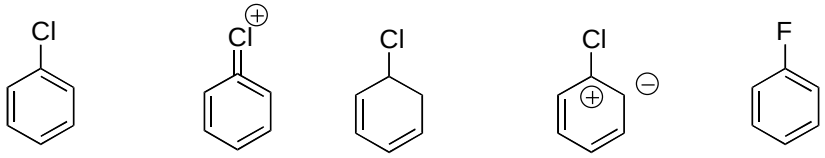
A

Ans:



Topic: Pattern Recognition
Section: 2.10
Difficulty Level: Easy

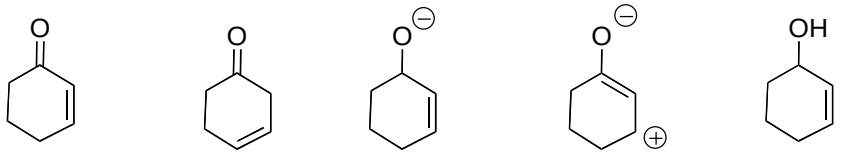
94. Which of the following is a correct resonance structure of A?



A. 1
B. 2
C. 3
D. 4
Ans: C

Topic: Pattern Recognition
Section: 2.10
Difficulty Level: Easy

95. Which of the following is a correct resonance structure of A?

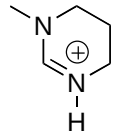


A. 1
B. 2
C. 3

D. 4
Ans: C

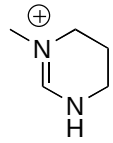
Topic: Pattern Recognition
Section: 2.10
Difficulty Level: Hard

96. Draw a resonance structure of A.



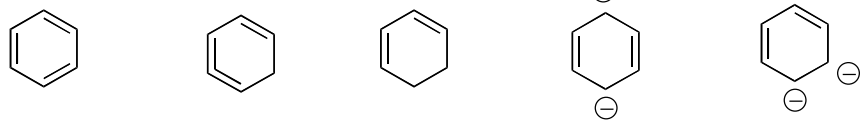
A

Ans:



Topic: Pattern Recognition
Section: 2.10
Difficulty Level: Easy

97. Which of the following is a correct resonance structure of A?

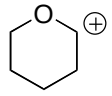


A 1 2 3 4

A. 1
B. 2
C. 3
D. 4
Ans: C

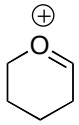
Topic: Pattern Recognition
Section: 2.10
Difficulty Level: Medium

98. Draw a resonance structure of A.



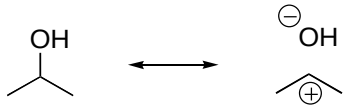
A

Ans:



Topic: Assessing Importance
Section: 2.11
Difficulty Level: Easy

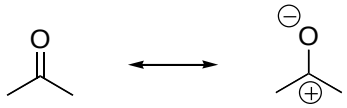
99. Is the following a valid resonance pair?



A. Yes
B. No
Ans: B

Topic: Assessing Importance
Section: 2.11
Difficulty Level: Easy

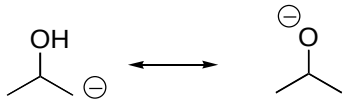
100. Is the following a valid resonance pair?



A. Yes
B. No
Ans: A

Topic: Assessing Importance
Section: 2.11
Difficulty Level: Easy

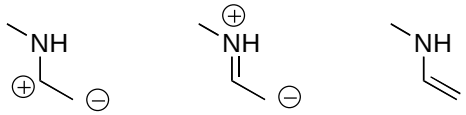
101. Is the following a valid resonance pair?



A. Yes
B. No
Ans: B

Topic: Assessing Importance
Section: 2.11
Difficulty Level: Easy

102. Which of the following resonance structures is the most significant?

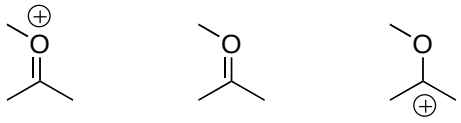


1 2 3

A. 1
B. 2
C. 3
Ans: C

Topic: Assessing Importance
Section: 2.11
Difficulty Level: Easy

103. Which of the following resonance structures is the most significant?

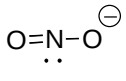


1 2 3

A. 1
B. 2
C. 3
Ans: C

Topic: Assessing Importance
Section: 2.11
Difficulty Level: Hard

104. Draw the resonance structures of the nitrite anion (NO_2^-) and indicate the most important one.

Ans: 

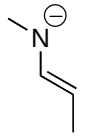
Topic: Assessing Importance
Section: 2.11
Difficulty Level: Hard

105. Draw the resonance structures of the cyanide anion (CN^-), indicating the most important one.

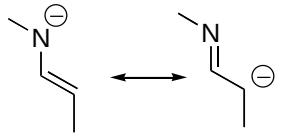
Ans: 

Topic: Assessing Importance
Section: 2.11
Difficulty Level: Medium

106. Draw the resonance structures of the following anion.

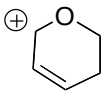


Ans:

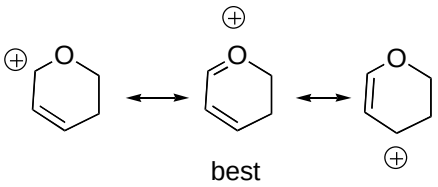


Topic: Assessing Importance
Section: 2.11
Difficulty Level: Hard

107. Draw the resonance structures of the following cation and indicate the most important one.

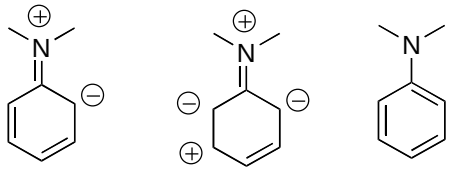


Ans:



Topic: Assessing Importance
Section: 2.11
Difficulty Level: Easy

108. Which of the following resonance structures of dimethylaniline is the most significant?

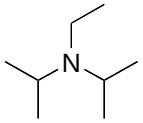


1 2 3

A. 1
B. 2
C. 3
Ans: C

Topic: Delocalized and Localized Lone Pairs
Section: 2.12
Difficulty Level: Easy

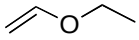
109. The lone pair in the following compound is:



A. localized
B. delocalized
Ans: A

Topic: Delocalized and Localized Lone Pairs
Section: 2.12
Difficulty Level: Easy

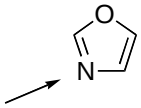
110. The lone pairs in the following compound are:



A. localized
B. delocalized
Ans: B

Topic: Delocalized and Localized Lone Pairs
Section: 2.12
Difficulty Level: Easy

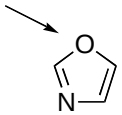
111. The indicated lone pair in the following compound is:



A. localized
B. delocalized
Ans: A

Topic: Delocalized and Localized Lone Pairs
Section: 2.12
Difficulty Level: Easy

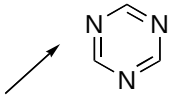
112. The indicated lone pair in the following compound is:



A. localized
B. delocalized
Ans: B

Topic: Delocalized and Localized Lone Pairs
Section: 2.12
Difficulty Level: Easy

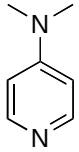
113. The indicated lone pair in the following compound is:



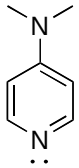
A. localized
B. delocalized
Ans: A

Topic: Delocalized and Localized Lone Pairs
Section: 2.12
Difficulty Level: Hard

114. Draw in all localized lone pairs on the following structure.

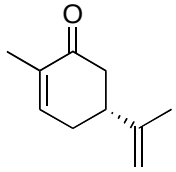


Ans:

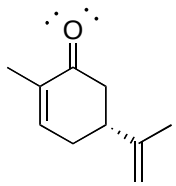


Topic: Delocalized and Localized Lone Pairs
Section: 2.12
Difficulty Level: Hard

115. Draw in all localized lone pairs on the following structure.



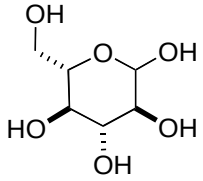
Ans:



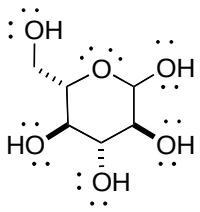
Topic: Delocalized and Localized Lone Pairs
Section: 2.12

Difficulty Level: Hard

116. Draw in all localized lone pairs on the following structure.

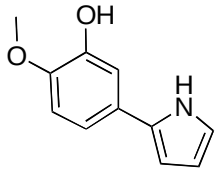


Ans:



Topic: Delocalized and Localized Lone Pairs
Section: 2.12
Difficulty Level: Hard

117. Draw in all delocalized lone pairs on the following structure.



Ans: