



CHEMISTRY

BOOKS - MS CHOUHAN CHEMISTRY (HINGLISH)

STEREOCHEMISTRY: CHIRAL MOLECULES

Solved Problem

1. Glycerol, $CH_2OHCHOHCH_2OH$, is an important constituent in the biological synthesis of fats.

Does glycerol have a plane of symmetry? If so, write a three-dimensional structure for glycerol and indicate where it is.



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2. Glycerol, $CH_2OHCHOHCH_2OH$, is an important constituent in the biological

synthesis of fats.

Is glycerol chiral?



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3. Shown here is an enantiomer of bromochlorofluoroiodomethane. Is it (R) Or (S)?



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4. Consider the following pair of structures and tell whether they represent enantiomers or two molecules of the same compound in different orientations:



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5. What is the actual stereoisomeric composition of the mixture referred to above?

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6. Which of the following is a meso compound?



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7. When (R)-1- bromo -2-butanol reacts with KI in acetone the product is 1-iodo-2-butanol. Would the product be (R) or (S)?

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8. Draw the most stable enol tautomers for each of the following:



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9. Draw the most stable enol tautomers for each of the following:



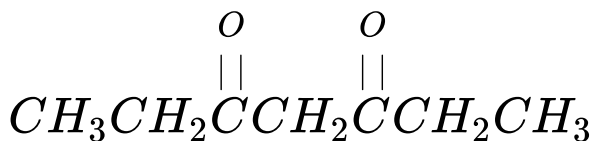
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10. Draw the most stable enol tautomers for each of the following:



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11. Draw the most stable enol tautomers for each of the following:



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12. Draw the most stable enol tautomers for each of the following:



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13. Provide an example indicating which of the hydrogen(s) would be exchanged for deuterium following base treatment in D_2O .



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14. Glycerol, $CH_2OHCHOHCH_2OH$, is an important constituent in the biological synthesis of fats.

Does glycerol have a plane of symmetry? If so, write a three-dimensional structure for glycerol and indicate where it is.



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15. Glycerol, $CH_2OHCHOHCH_2OH$, is an important constituent in the biological

synthesis of fats.

Is glycerol chiral?



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17. Consider the following pair of structures and tell whether they represent enantiomers or two molecules of the same compound in different orientations:



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19. Which of the following is a meso compound?



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20. When (R)-1- bromo -2-butanol reacts with KI in acetone the product is 1-iodo-2-butanol. Would the product be (R) or (S)?

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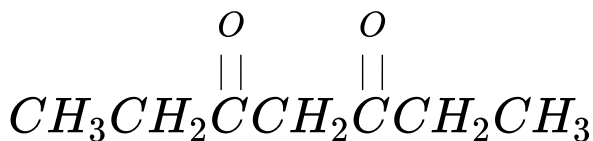
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23. Draw the most stable enol tautomers for each of the following:



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24. Draw the most stable enol tautomers for each of the following:



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25. Draw the most stable enol tautomers for each of the following:



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26. Provide an example indicating which of the hydrogen(s) would be exchanged for deuterium following base treatment in D_2O .



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Additional Objective Questions

1. Which of the following pairs of structures do not represent isomers?

A. 

B. 

C. 

D. 

Answer: D



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2. Only two isomers of monochloro product is possible for

A. n-butane.

B. 2,4-dimethyl pentane.

C. benzene.

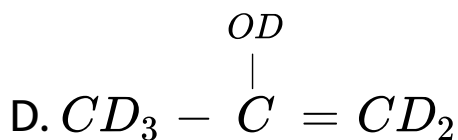
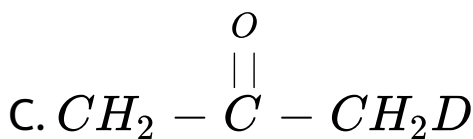
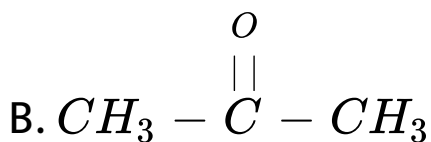
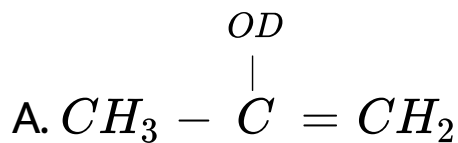
D. 1-methyl propane.

Answer: A



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3. The enol form of acetone, after prolonged treatment with D_2O , gives



Answer: D



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4. Which of the following is formed as intermediate in ketoenol isomerism?

A. 

B. 

C. 

D. 

Answer: D



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5. How many optically active stereoisomers are possible for butane-2,3-diol?

A. 1

B. 2

C. 3

D. 4

Answer: B



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6. Which of the following compound have almost 100% enol content?

A. 

B. 

C. 

D. 

Answer: C



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7. The number of isomers for the compound with molecular formula $C_2BrClFl$ is

A. 3

B. 4

C. 5

D. 6

Answer: D



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8. On monochlorination of 2-methylbutane, the total number of chiral compounds formed is

A. 2

B. 4

C. 6

D. 8

Answer: B



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9. Which of the following compound is not optically active?

A. 

B. 

C. 

D. 

Answer: D



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10. The number of structural isomers for

C_6H_{14} is

A. 3

B. 4

C. 5

D. 6

Answer: C



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11. The process separation of (d,l)-mixture into its constituents is referred to as

A. fractional distillation.

B. resolution.

C. fragmentation.

D. sedimentation.

Answer: B



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12. Which of the following compounds have plane of symmetry?

A. 

B. 

C. 

D. 

Answer: A



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13. Which of the following will have meso-isomer also?

A. 2-Chlorobutane

B. 2-Hydroxy propanoic acid

C. 2,3-Dichloropentane

D. 2,3-Dichlorobutane

Answer: D



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14. The molecule that has formula C_5H_8 with $2sp^3C$'s, $2sp^2C$'s, and 1 sp C and chiral isomer is

A. 

B. 

C. 

D. 

Answer: C



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15. In which of the following compounds plane of symmetry and center of symmetry both are present?

A. 

B. 

C. 

D. 

Answer: B



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16. Which of the following compound does not undergo basecatalyzed exchange in D_2O even through it has an α -hydrogen?

A. 

B. 

C. 

D. Both (b) and (c)

Answer: D



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17. Which of following compound will rotate the plane polarized light at room temperature?

A. 

B. 

C. 

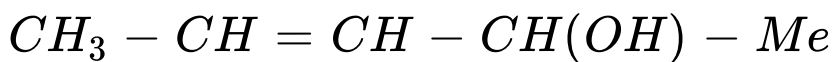
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18. The number of stereoisomers possible for the following compound is



A. 3

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19. Which of following compounds is chiral?

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B. 

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Answer: C



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20. Which of the following pairs of structures fo not represent isomers?

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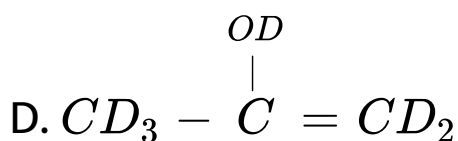
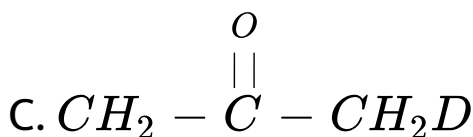
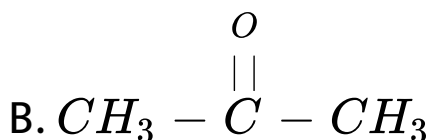
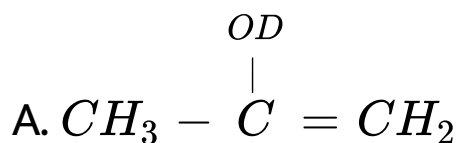
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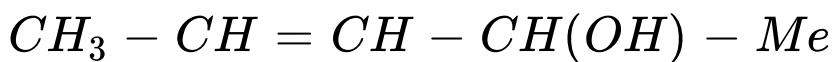
D. 

Answer: B



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37. The number of stereoisomers possible for the following compound is



A. 3

B. 2

C. 4

D. 6

Answer: C



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38. Which of following compounds is chiral?

A. 

B. 

C. 

D. 

Answer: C



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1. The number of possible alkynes with molecular formula C_5H_8 is _____ .



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2. The total number of possible isomeric structures for trimethyl benzene is _____ .



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3. What is the total number of stereoisomers that can exist for the molecule 2,6-dichlorocyclohexanol?



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4. The number of possible alkynes with molecular formula C_5H_8 is _____.



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