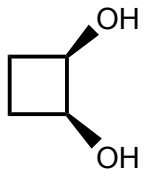
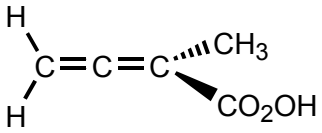
PRACTICE QUESTIONS FOR CH. 5
PART I

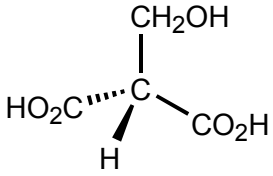
1) Is the molecule shown below chiral or achiral?



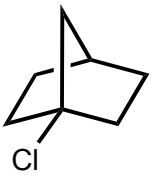
2) Is the molecule shown below chiral or achiral?



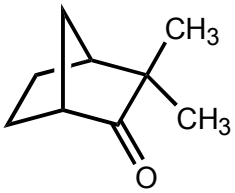
3) Is the molecule shown below chiral or achiral?



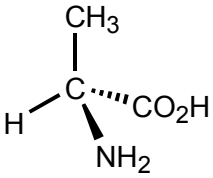
4) Is the molecule shown below chiral or achiral?

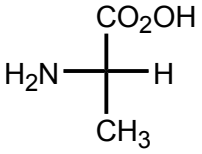


5) Is the molecule shown below chiral or achiral?

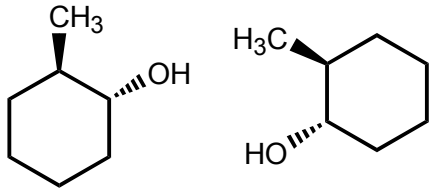


6) Which of the following terms best describes the pair of compounds shown: <u>enantiomers</u>, <u>diastereomers</u>, or <u>the same compound</u>?

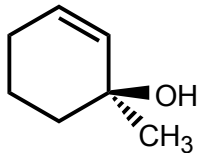




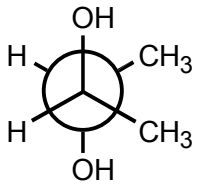
7) Which of the following terms best describes the pair of compounds shown: enantiomers, diastereomers, or the same compound?



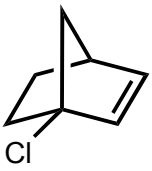
8) Label each asymmetric carbon in the compound below as *R* or *S.*



9) Label each asymmetric carbon in the compound below as *R* or *S.*



10) Label each assymetric carbon in the compound below as *R* or *S.*

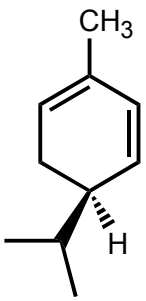


11) Draw the structure of (2*R*,3*S*)-2,3-dichloropentane. Take particular care to indicate three-dimensional stereochemical detail properly.

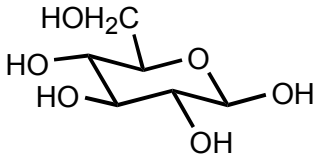
12) Draw the structure of (*S*)-1-bromo-1-chloropropane. Take particular care to indicate three-dimensional stereochemical detail properly.

13) Draw the structure of a meso form of 1,3-dichlorocyclopentane. Take particular care to indicate three-dimensional stereochemical detail properly.

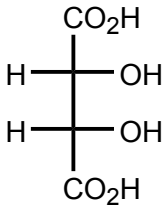
14) How many asymmetric carbons are present in the compound below?



15) How many asymmetric carbons are present in the compound below?



16) How many asymmetric carbons are present in the compound below?

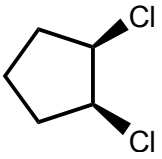


17) How many asymmetric carbons are present in the compound below?

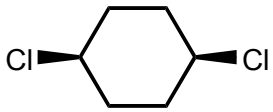
-ethyl-2,2,4-trimethylpentane

18) Can the molecule shown below be properly described as a meso compound?

19) Can the molecule shown below be properly described as a meso compound?



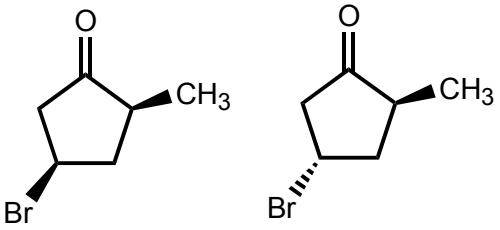
20) Can the molecule shown below be properly described as a meso compound?



21) Draw the structure of (1*R*, 2*R*)-1-bromo-2-chlorocyclobutane. Take particular care to indicate stereochemistry properly.

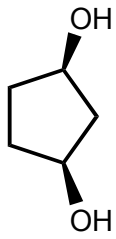
22) Stereoisomers which are not mirror image isomers are _____.

23) Is it theoretically possible to separate the pair of compounds below by distillation? Explain briefly.



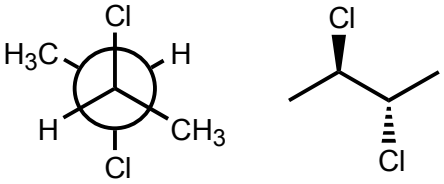
24) Draw the Fischer projection of (*S*)-2-hydroxybutanoic acid, $CH_3CH_2CH(OH)COOH$.

25) How many enantiomers are there of the molecule shown below?

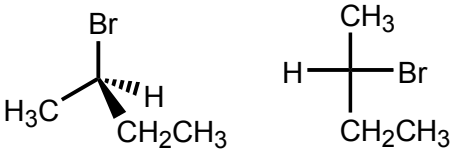


A. 6 B. 2 C. 0 D. 1 E. 3

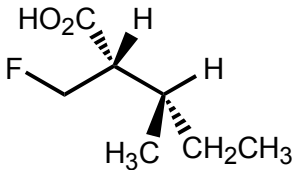
26) Which of the following terms best describes the pair of compounds shown: enantiomers, diastereomers, or the same compound?



27) Which of the following terms best describes the pair of compounds shown: enantiomers, diastereomers, or the same compound?



28) Label each asymmetric carbon in the molecule below as having the *R* or *S* configuration.



ANSWERS

1) achiral

2) achiral

3) achiral

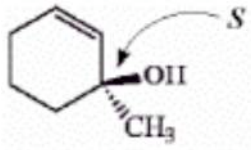
4) achiral

5) chiral

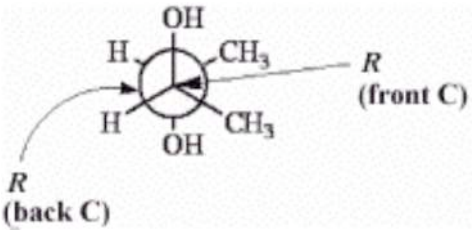
6) the same compound

7) enantiomers

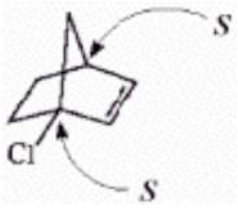
8)



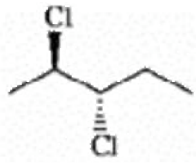
9)



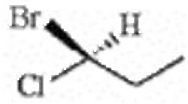
10)

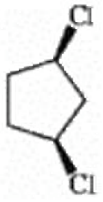


11)



12)



13) 

14) 1

15) 5

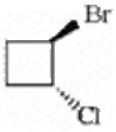
16) 2

17) 1

18) No

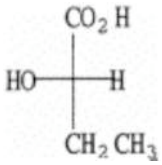
19) Yes

20) No

21) 

22) diastereomers

23) Yes. The molecules are related as diastereomers and hence have different boiling points.

24) 

25) C

26) the same compound

27) enantiomers

28)