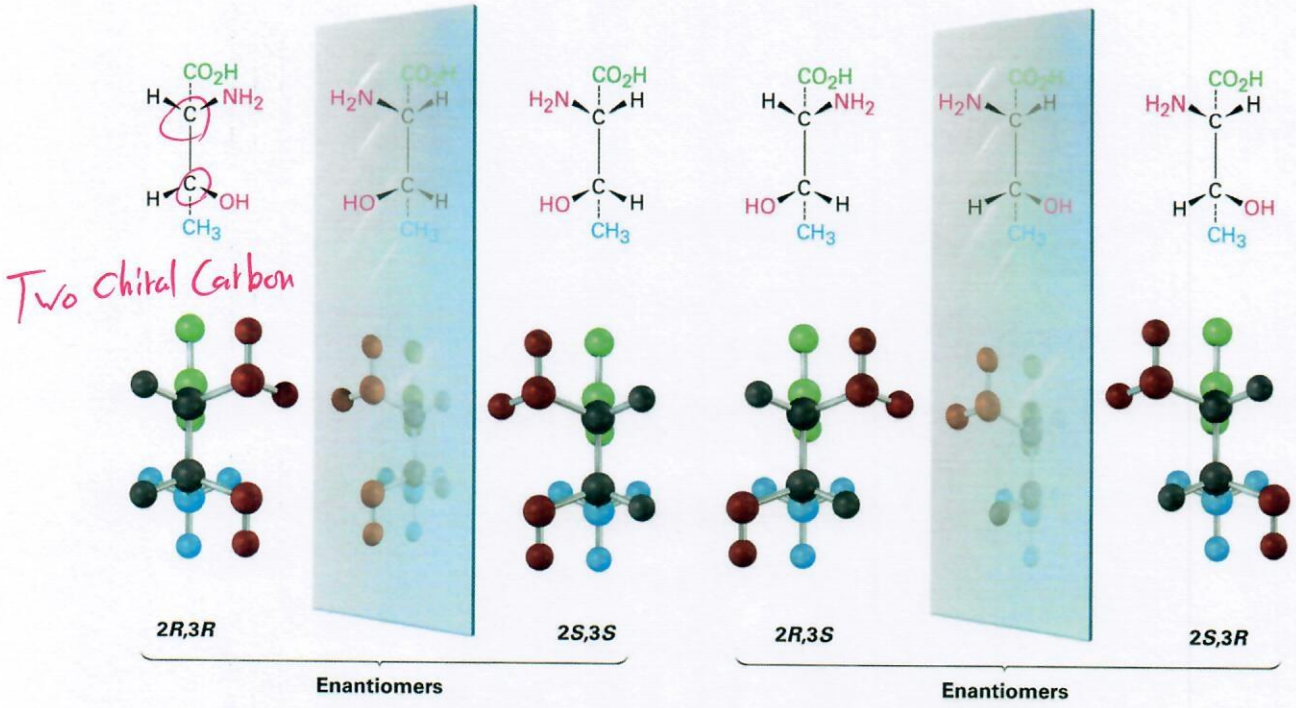
P 131 ( Text book, or P 32 on ppt )




A B C D

1. 2-amino-3-hydroxybutanoic acid

has $2^2 = 4$ stereoisomers.
(A. B. C. D)

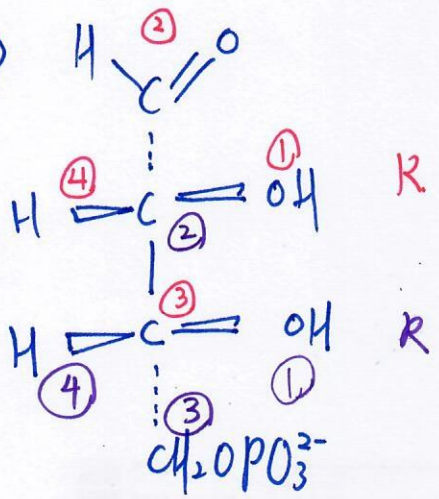
2. A has one enantiomers (B).
B has one enantiomers (A)

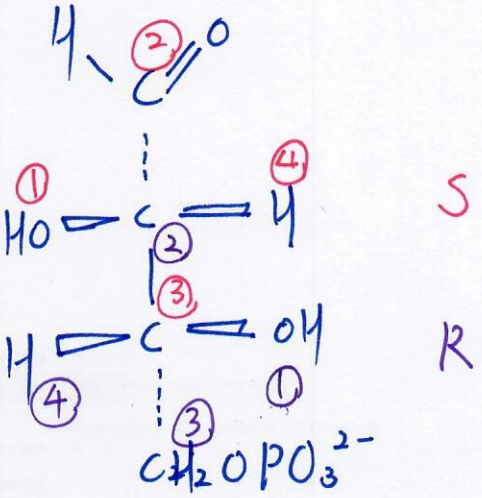
A and B are enantiomers.
and
C and D are enantiomers.

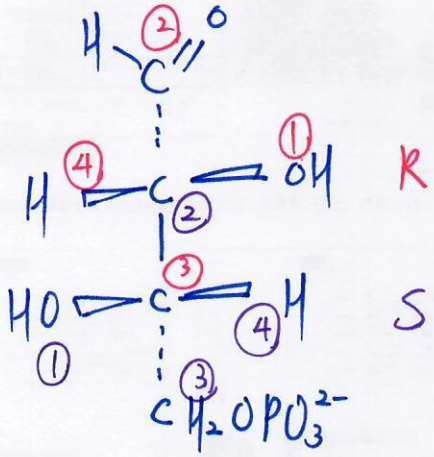
3. A has two diastereomers. (C. D)
B has also two diastereomers (C. D)
C has two diastereomers (A. B)
D has also two diastereomers (A. B)

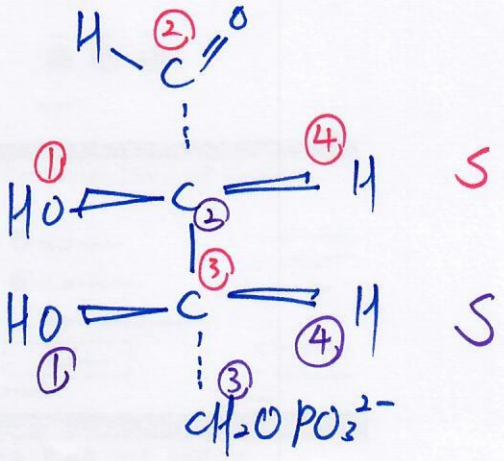
P 132 ( Text book )

Problem 5-13.

(a) 


(b) 


(c) 


(d) 


(a), (b), (c), and (d) are stereoisomers.

(a) and (d) are enantiomers.

(b) and (c) are enantiomers.

(a) has two diastereomers, (b) and (c)

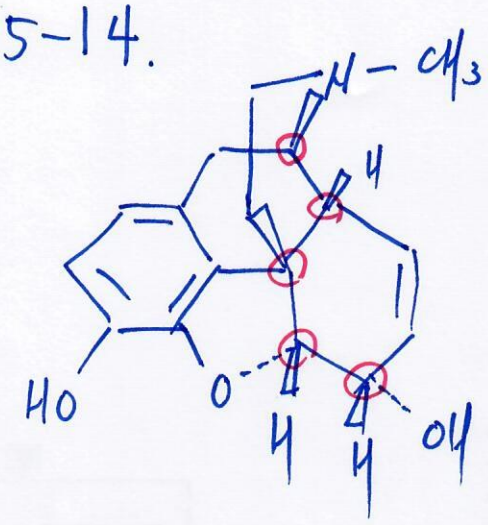
(d) has two diastereomers, (b) and (c)

(b) has two diastereomers, (a) and (d)

(c) has two diastereomers, (a) and (d).

p 133 (text)
p 33 (ppt)

problem 5-14.



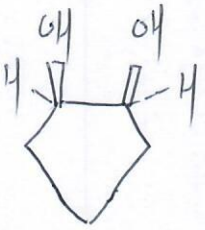

has 5 chirality centers.

Total stereoisomers = $2^5 = 32$

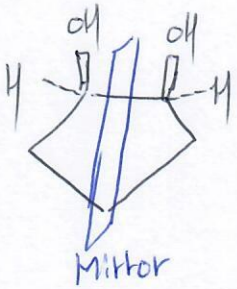
Problem 5-18. ☰

Q : which one is a meso compound ?.

(a)



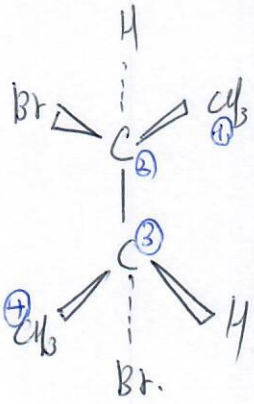

Assumed the mirror on the center in molecule.



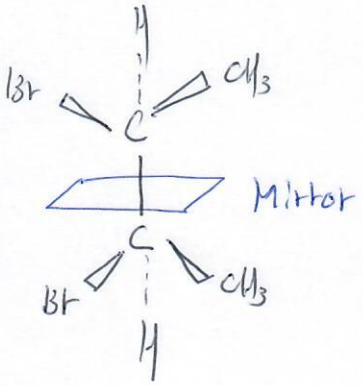

The left structure and the right structure are same.

So, this compound is a meso compound.

(d)



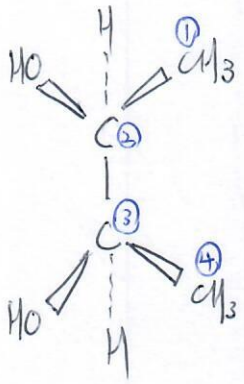

Rotate the C3




This compound is also a meso compound.

Problem 5-17-1.

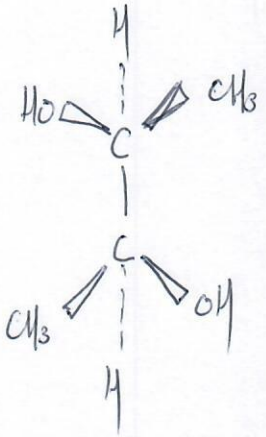
(a) 2,3-Butanediol



C2 is chiral and has S configuration.

C3 is chiral and has R configuration.

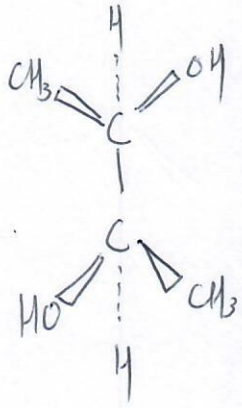
(2S, 3R)-2,3-Butanediol is a meso compound.



C2 has S configuration

C3 has S configuration.

(2S, 3S)-2,3-Butanediol is not a meso compound.



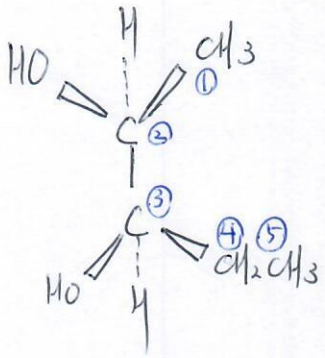
C2 has R configuration

C3 has R configuration.

(2R, 3R)-2,3-Butanediol is not a meso compound.

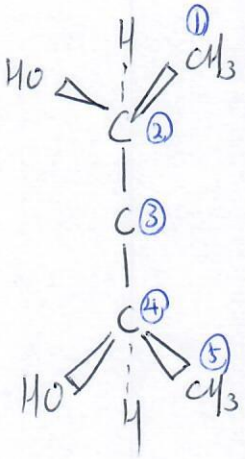
Problem 5-17-2.

(b) 2.3-Pentanediol.




is not a meso compound.

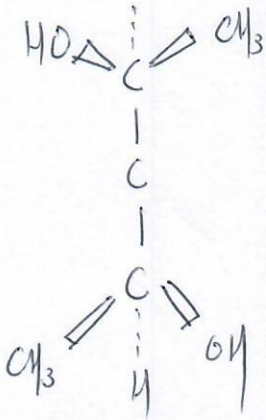
(c) 2.4-Pentanediol.




C2 is chiral and has S configuration.

C4 is chiral and has R configuration.

(2S, 4R)-2.4-Pentanediol is a meso compound.

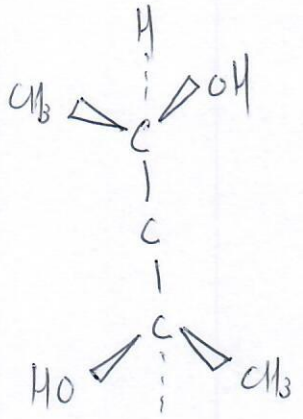



C2 has S configuration

C4 has S configuration.

(2S. 4S)-2.4-Pentanediol is not a meso compound.

Problem 5-17-3.




$C_2$ has R configuration

$C_4$ has R configuration.

(2R, 4R) - 2,4 - Pentanediol is not a meso compound.

p 40. (ppt)

How to seperate racemic mixture.

R - configuration
S - configuration
] enantiomers

Physical and chemical properties are same.

⇓ make salt with base

[ R - configuration$^-$ + R - formed base
S - configuration$^-$ + R - formed base. ]

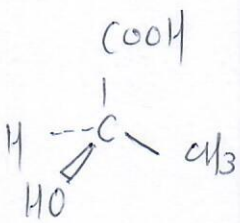
Diastereomers

Physical and chemical properties are different.
So they are seperated.

⇓ cleave the base

R - configuration , S - configuration.

Problem 5-20

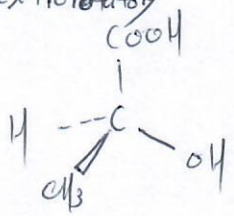


(R) - Lactic acid

or

(+) - Lactic acid.

dextrorotatory

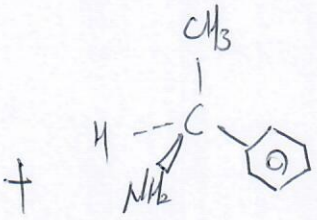


(S) - Lactic acid

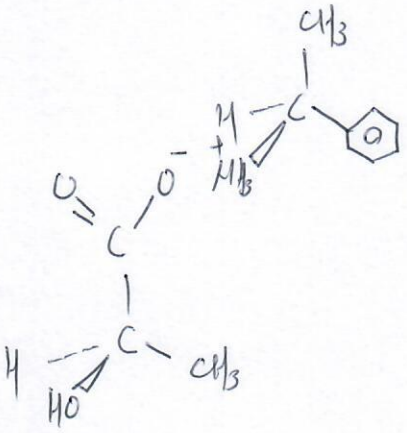
or

(-) - Lactic acid.

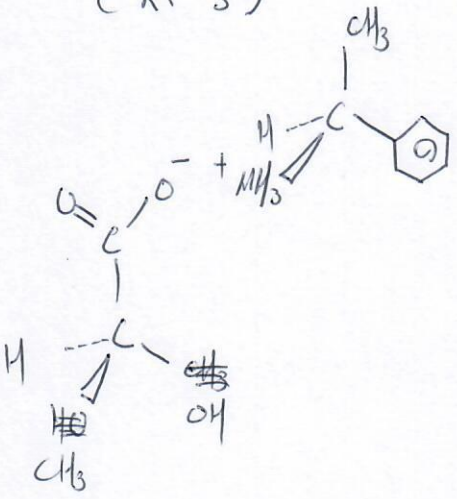
levorotatory.



(S)-1-phenyl-ethylamine.



(R, S)



(S, S)

(R, S) configuration and (S, S) configuration are diastereomers.

So (R, S) and (S, S) are seperated.