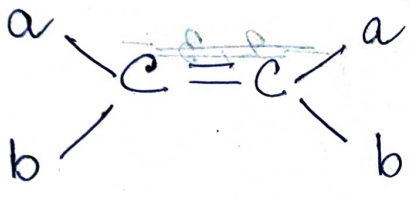
cis - trans isomerism (geometrical isomerism):

identical formula (not shape)

Isomers

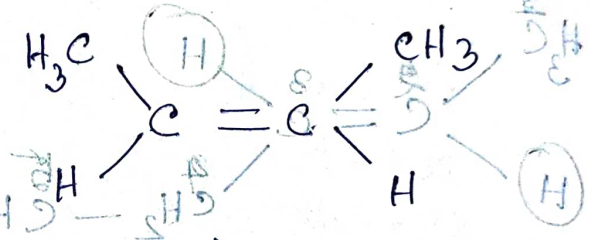
= (double bond)



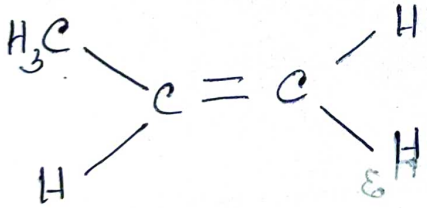
$(a \neq b)$

Let, a = CH_3

b = H

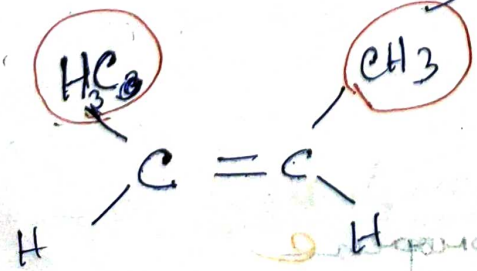


↓ cis-trans isomers



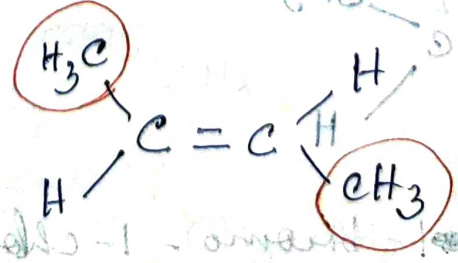
$(a \neq b)$

not cis-trans isomers.



C_4H_8

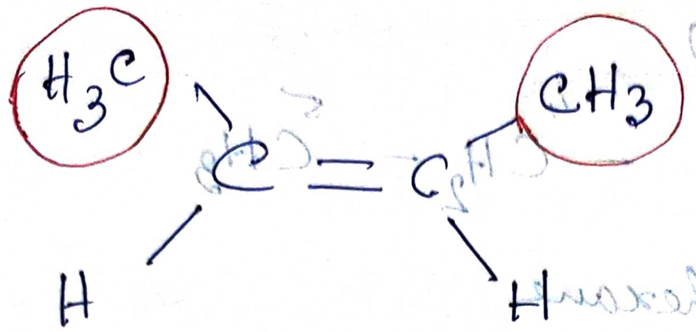
cis-isomer

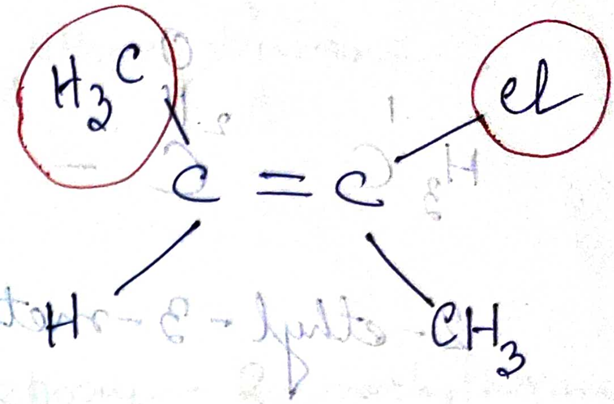


C_4H_8 → isomer.

trans isomer.

E/Z Nomenclature



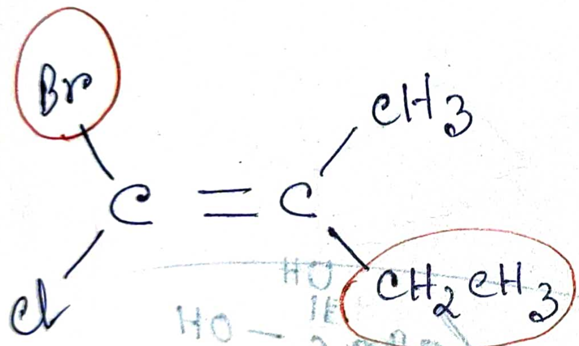


cis, Z

↓

Z → ভারী group same দিকে থাকে,

trans, Z



E

C → 12
Cl → 35.5
Na → 23
H → 1
N → 14
O → 16
Ca → 40

R-S Nomenclature:-

Rules:

(0) Nearer end of an axis or a plane precedes the farther end (proximity rule)

(1) Higher atomic number precedes lower. ~~e.g.~~

eg: S > F > O > N > C > H

(2) Higher atomic mass number precedes lower.

e.g. T > D > H

(3) Cis ~~per~~ precedes trans ; and Z precedes E

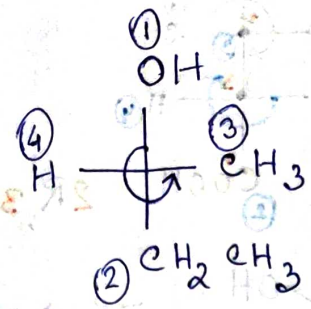
(4) Like pair RR or S, S precedes unlike R, S or S, R

(5) R precedes S

Atoms and groups with increasing priority:-

0. Lone pair
1. H
2. D
3. CH_3
4. CH_2CH_3
5. $CH_2(CH_2)_nCH_3$
6. $CH_2-CH=CH_2$
7. $CH_2-C\equiv CH$
8. $CH_2C_6H_5$
9. $CH(CH_3)_2$
10. $CH=CH_2$
11. $C(CH_3)_3$
12. $C\equiv CH$
13. C_6H_5
14. CH_2OH
15. $CH=O$
16. COR
17. $CONH_2$
18. CO_2H
19. CO_2R
20. NH_2
21. $NHCH_3$
22. $N(CH_3)_2$
23. NO
24. NO_2
25. OH
26. OCH_3
27. OC_6H_5
28. $OCOR$
29. F
30. SH
31. SR
32. SOR
33. SO_2R
34. Cl
35. Br
36. I

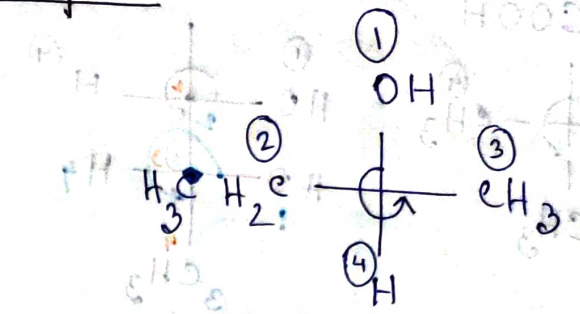
R-S Nomenclature Example :



anticlockwise → S

④ no. gr. → horizentally present.

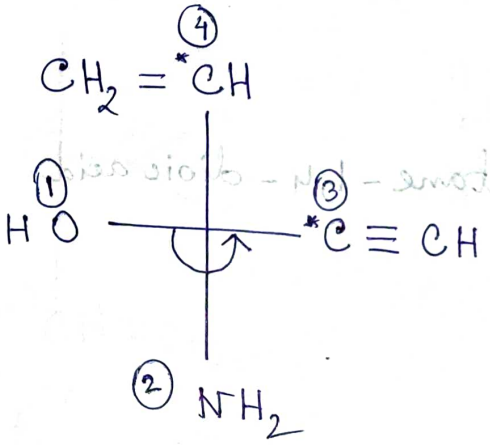
R

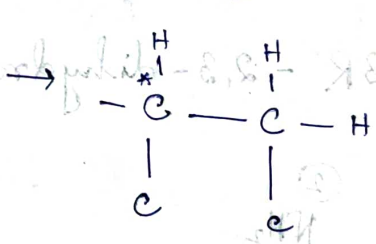


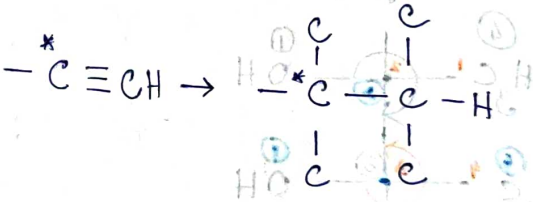
anticlockwise → S

④ no. gr. → vertical line.

S



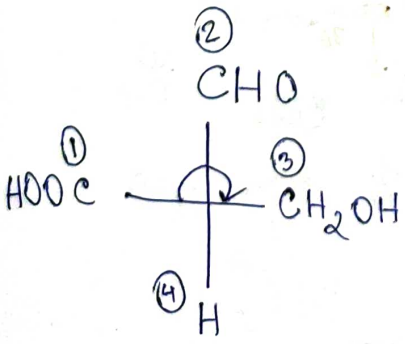


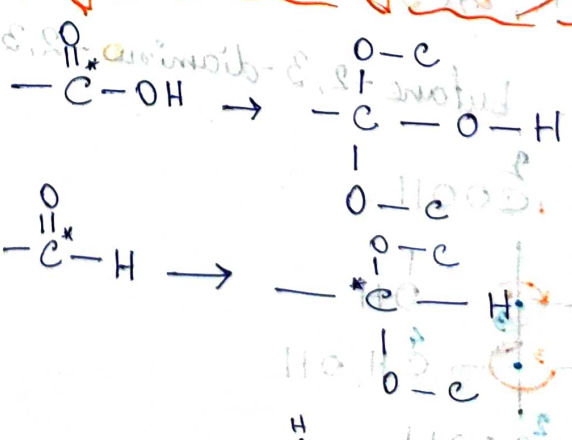


3

$(-OH) > -NH_2 > -C \equiv CH > -CH = CH_2)$ Fantom atom.

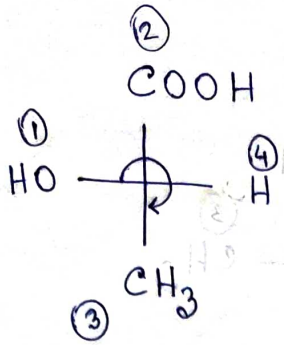
CIP Rule (Cahn - Ingold - Prelog Rule)



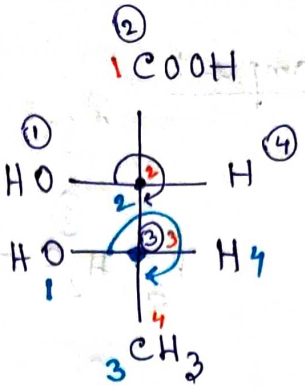


R

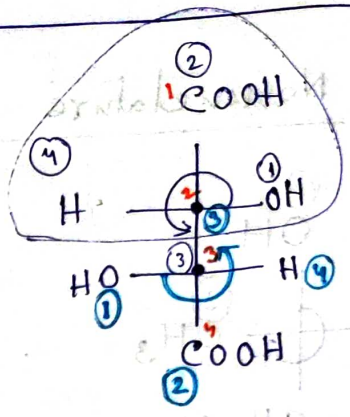
$-COOH > -CHO > -CH_2OH > H$



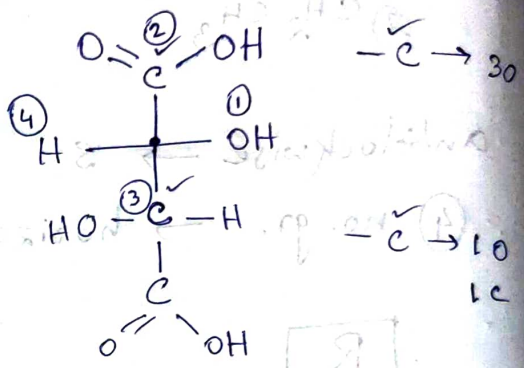
S

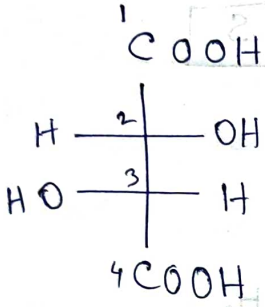


2S, 3S

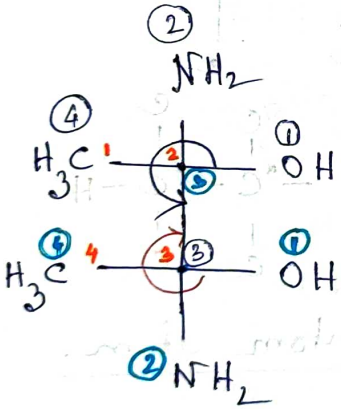


2R, 3R





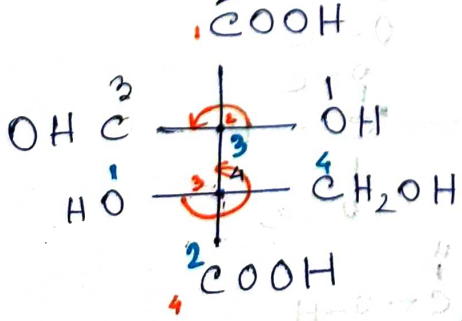
2R, 3R - 2,3 - dihydroxybutane - 1,4 - dioic acid



2R, 3RS

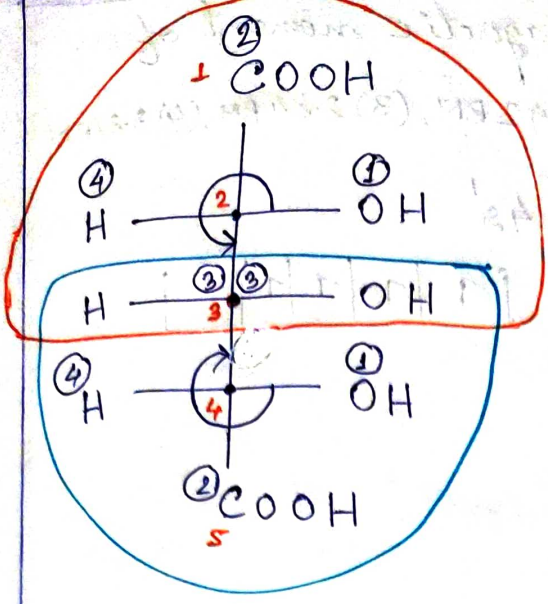
2R, 3R - butane - 2,3 - diamine - 2,3 - diol

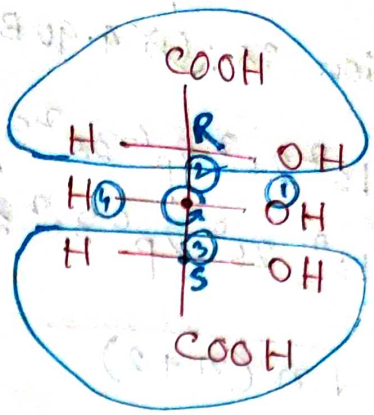
30°



2S, 3R

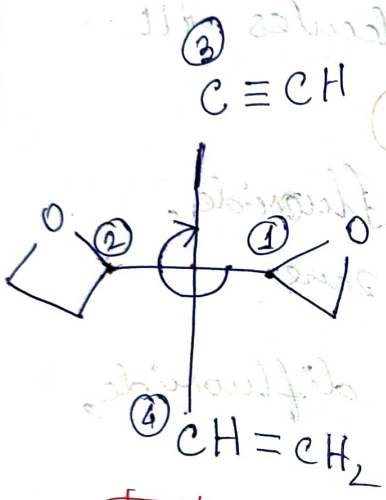
2S, 3R - 2,3 - dihydroxy - 2 - formyle - 3 - hydroxy methylbutan - 2,3 - dioic acid ~~methyl - 2,3 butan~~



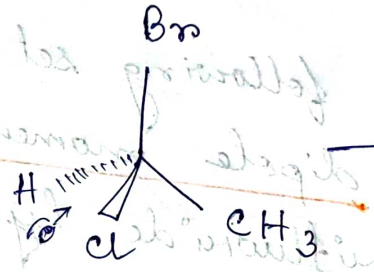


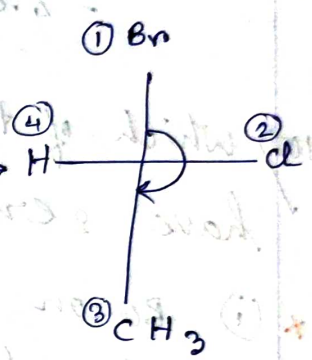
Syllabus
Full Organic, Redox

2R, 3R, 4S

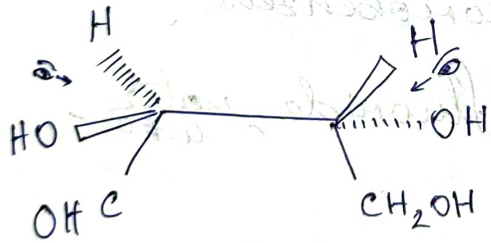


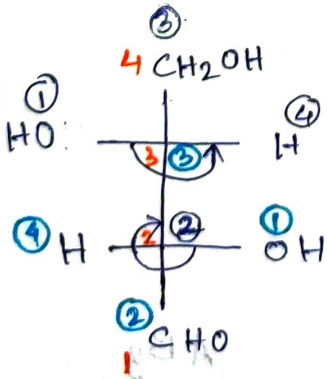
R





S

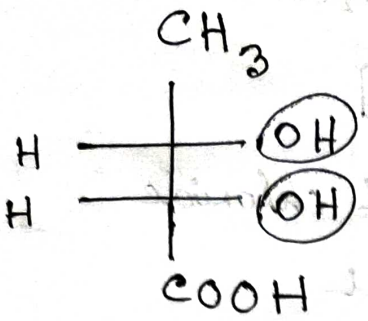




~~2R~~ : 2S, 3R

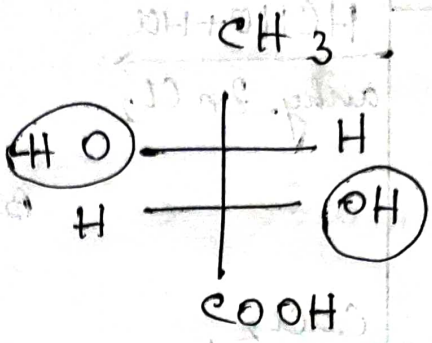
2S, 3R - 2, 3, 4- trihydroxybutanal

Threo - Erythro nomenclature :



Erythro

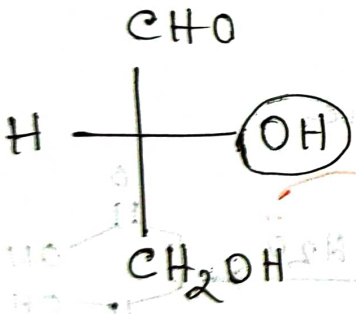
(Same gr. একই দিকে থাকলে)



Threo

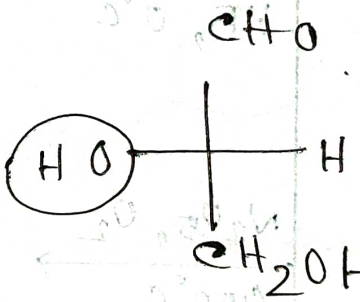
(Same gr. opposite দিকে থাকলে).

D/L nomenclature :



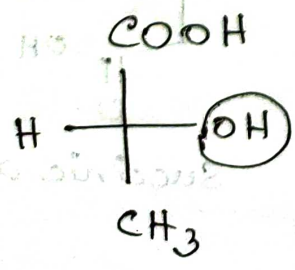
D-glyceraldehyde

(D → dextrorotatory)

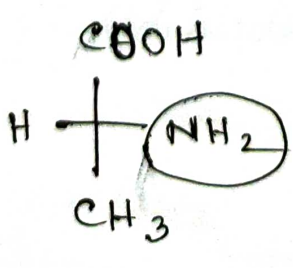


L - glyceraldehyde

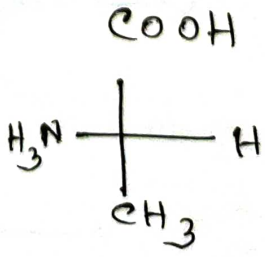
(L → Levorotatory).



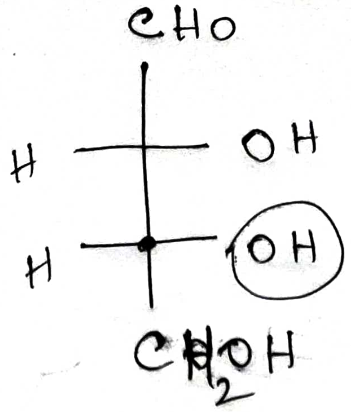
D - lactic acid.



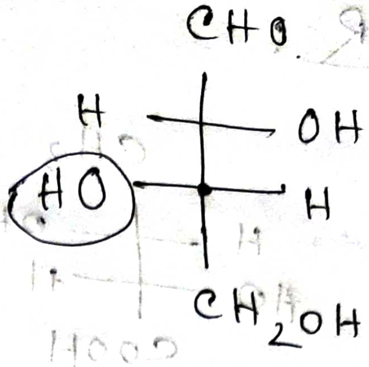
D - alanine



L - alanine

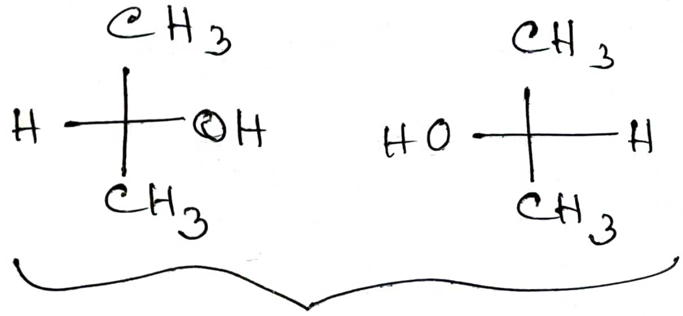


D



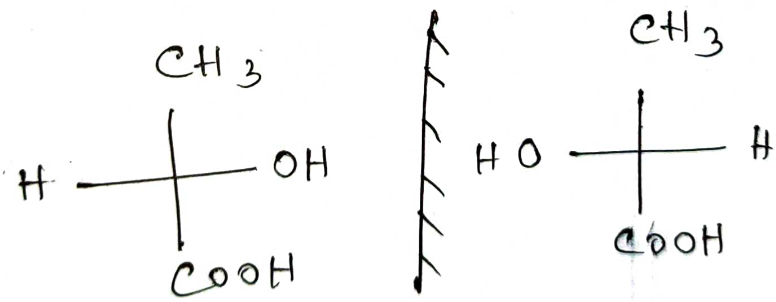
L

HOMOMER :



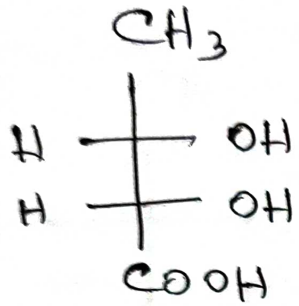
Same structure.

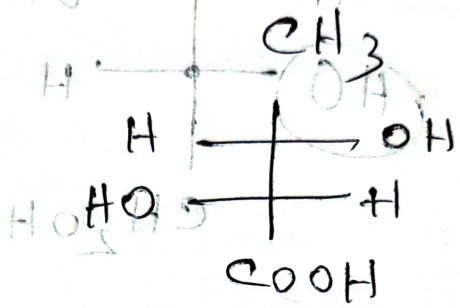
ENANTIOMER :



i) Mirror image relationship
ii) Superimposable structures.
↓
একটার compound কে অপর একটার উপর বসিয়ে দেওয়া যাবে।

DIASTEREOMER :





i) No mirror image relationship.

ii) Two different compounds

iii). Non-superimposable structures.