

arrangement of atom or group

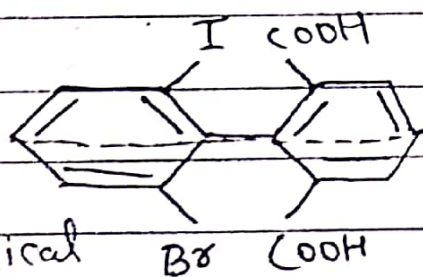
eg:-

- 1} Biphenyl system
- 2} Allene system
- 3} ~~spiro~~/Spirane system

* Biphenyl system:-

When biphenyl system unsymmetrical horizontally (both ring not one ring)
In biphenyl system two bigger group/atoms present at ortho position (I, Br, Cl, COOH, COOR, NO₂, SH etc) not smaller group (F, H, OH, NH₂ etc) it is also called ortho isomerism

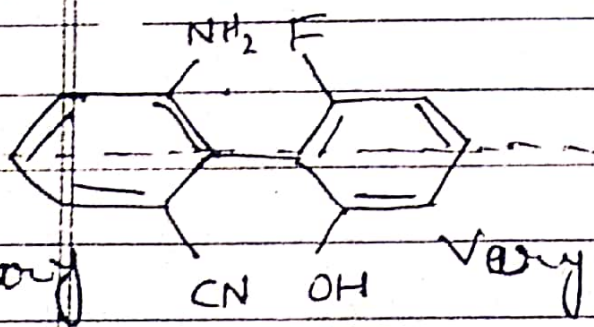
eg:-



X

Symmetrical

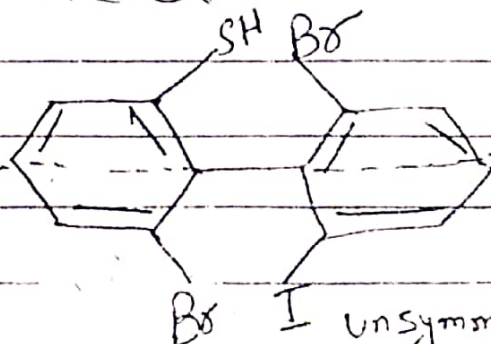
(eg)



CN OH

X

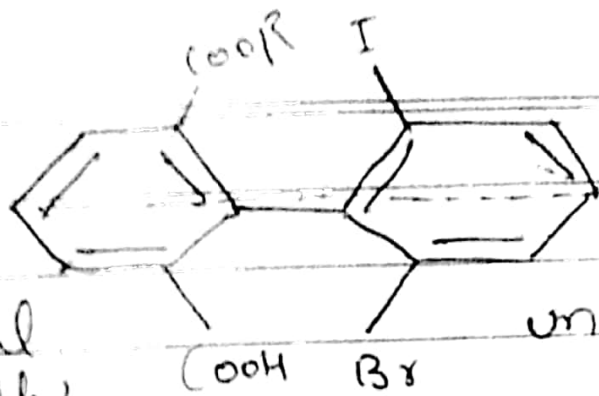
(eg)



optically active

active

✓



unsymmetrical
horizontally

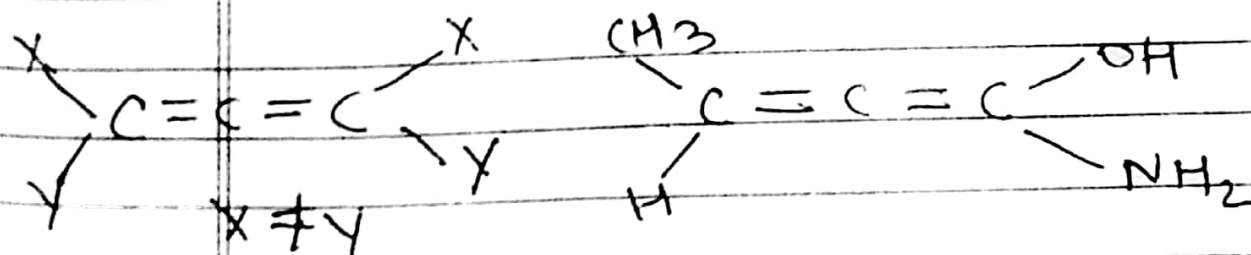
unsymmetrical
horizontally

* Allene system optically inactive

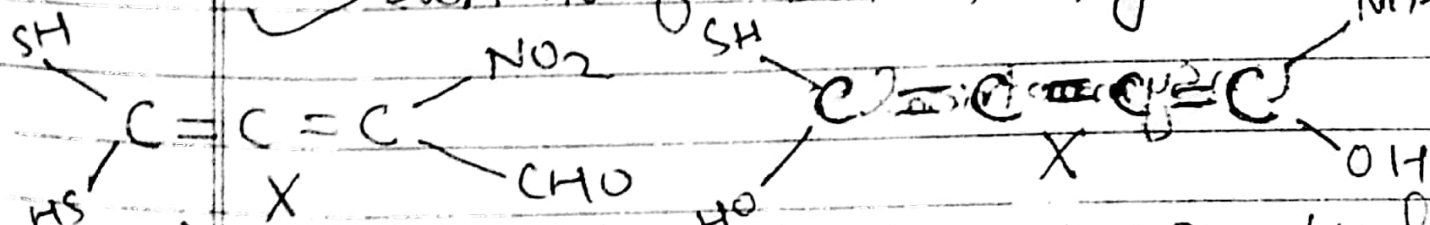
two or more than two

- When double bond present continue then called allen system or Cumulated System.

- When no. of double bond are even and $x \neq y$ must be different then show optical isomerism. If no. of double bond are odd then show geometrical isomerism.



even no. of = bond, $x \neq y$ optically



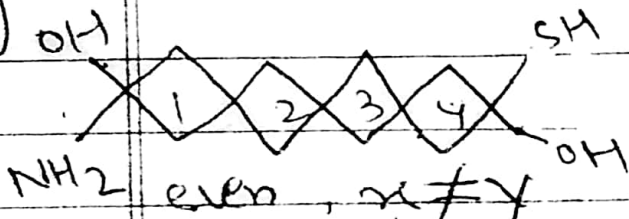
odd no. of = bond $x \neq y$ optically inactive geometrical

- When diagonal atom or group are same then called trans if diagonal atom or grp. are different then called cis.

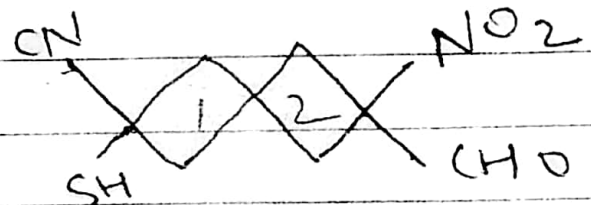
*Spiro/Spirane system:-

When ^{two or more} rings present continue then called spirane system. No. of ring must be even and $X \neq Y$
 If no. of rings are odd then show geometrical isomerism

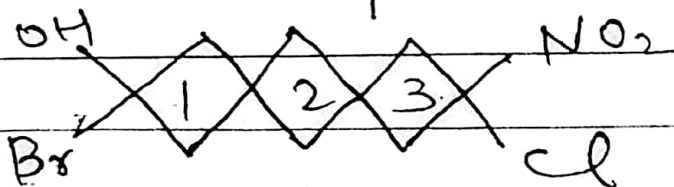
eg:-



✓ optically active



✓ optically active



odd, trans, geometrical, $x \neq y$

-- When diagonal atom or group are same then called trans if diagonal atom or grp. are different then called cis.