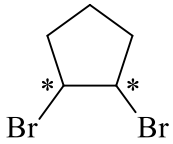
Marks 3

- 1,2-Dibromocyclopentane has two stereogenic carbon atoms, each marked with an asterisk (*) on the structure below.

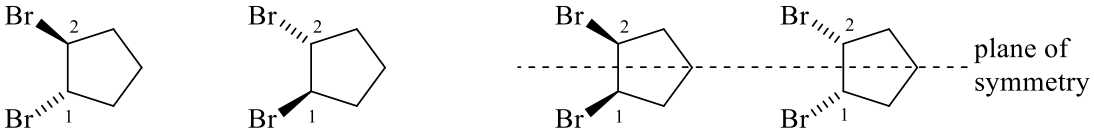


The maximum number of configurational stereoisomers is given by the formula 2^n, where n is the number of stereogenic centres.

1,2-Dibromocyclopentane has only three configurational stereoisomeric forms, not four. Explain briefly why this is the case. Include drawings of the relevant stereoformulas in your answer.

There are 4 possibilities: (1*R*,2*R*)-, (1*S*,2*S*)-, (1*R*,2*S*)- and (1*S*,2*R*)-.

The first two of these are enantiomers. The last two are the same compound, a *meso*- isomer.



(1*S*,2*S*)- (1*R*,2*R*)- (1*R*,2*S*)- (1*S*,2*R*)-

enantiomers *meso*-isomer