

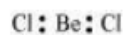
Question 4.7:

Discuss the shape of the following molecules using the VSEPR model:

BeCl₂, BCl₃, SiCl₄, AsF₅, H₂S, PH₃

Answer

BeCl₂:

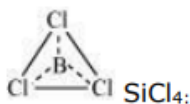


The central atom has no lone pair and there are two bond pairs. i.e., BeCl₂ is of the type AB₂. Hence, it has a linear shape.

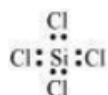
BCl₃:



The central atom has no lone pair and there are three bond pairs. Hence, it is of the type AB₃. Hence, it is trigonal planar.

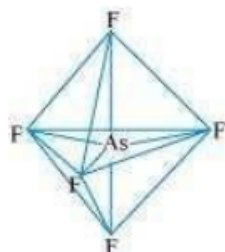


SiCl₄:



The central atom has no lone pair and there are four bond pairs. Hence, the shape of SiCl₄ is tetrahedral being the AB₄ type molecule.

AsF₅:



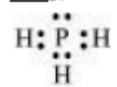
The central atom has no lone pair and there are five bond pairs. Hence, AsF₅ is of the type AB₅. Therefore, the shape is trigonal bipyramidal.

H₂S:



The central atom has one lone pair and there are two bond pairs. Hence, H₂S is of the type AB₂E. The shape is Bent.

PH₃:



The central atom has one lone pair and there are three bond pairs. Hence, PH₃ is of the AB₃E type. Therefore, the shape is trigonal bipyramidal.