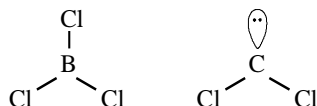


1.3 – STRUCTURE & BONDING – PPQ3



Name Form

- 3) a) The shape of the molecule BCl_3 and that of the unstable molecule CCl_2 are shown below.



- i) Why is each bond angle exactly 120° in BCl_3 ?

.....

- ii) Predict the bond angle in CCl_2 and explain why this angle is different from that in BCl_3 .

Predicted bond angle

Explanation

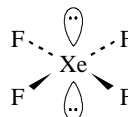
..... (5)

- b) Give the name which describes the shape of molecules having bond angles of $109^\circ 28'$. Give an example of one such molecule.

Name of shape

Example..... (2)

- c) The shape of the XeF_4 molecule is shown below.



- i) State the bond angle in XeF_4

- ii) Suggest why the lone pairs of electrons are opposite each other in this molecule.

.....

.....

- iii) Name the shape of this molecule, given that the shape describes the positions of the Xe and F atoms only.

..... (4)

- d) Draw a sketch of the NF_3 molecule. Indicate in your sketch any lone pairs of electrons on nitrogen.

(2)