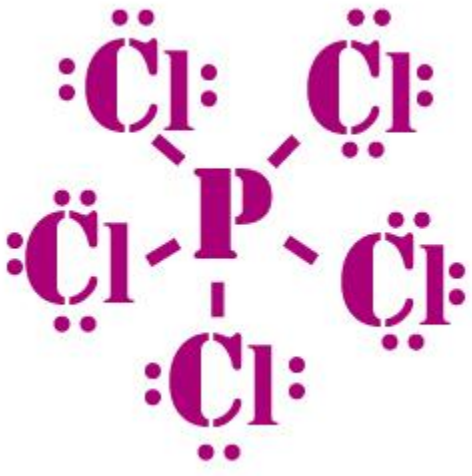
Question #84797, Chemistry / Physical Chemistry | for completion

Arrive at the Lewis structure of PCl5 and XeF4 using the steps indicated in your Unit

Answer:

Step method to draw lewis structure of phosphorous penta chloride
Step 1: Find valence e- for all atoms. Add them together.
P:5
C:7x5=35
Total=40
Step2: Find octet e- for each atom and add them together.
P:10*
Cl:8x5=40
Total=50
Phosphorous gets 10 electrons since it should make 5 bonds with surrounding atoms.
Step3: Gives you bonding e-. Subtract step 1 total from step 2
50-40=10e-
Step 4: Find number of bonds by diving the number in step 3 by 2(because each bond is made of 2 e-)
10e-/2= 5 bond pairs
Step 5: Find the number of nonbonding (lone pairs) e-. Subtract step 3 number from step 1.
40-10= 30e-=15 lone pairs
Use information from step 4 and 5 to draw the lewis structure.



Lewis dot structure of PCl5

Step method to draw lewis structure of Xenon tetrafluoride

Step method to draw lewis structure for XeF4(This molecules is an example of expanded octet)

Step 1: Find valence e- for all atoms. Add them together.

Xe:8

F:7x4=28

Total=36

Step2: Find octet e- for each atom and add them together.

Xe=12

F:8x4=32

Total=44

Bromine gets 12 electrons in order to make 5 bonds with surrounding atoms.

Step3: Gives you bonding e-. Subtract step 1 total from step 2

44-36=8e-

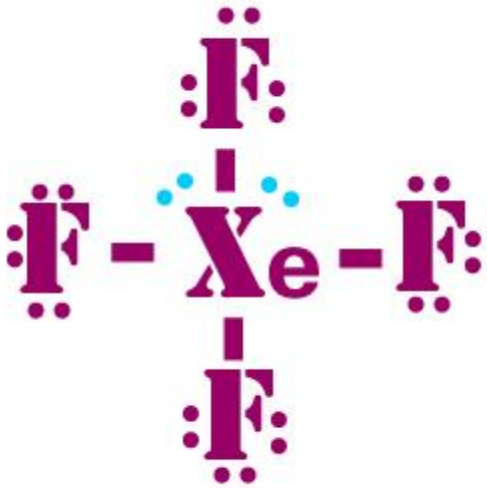
Step 4: Find number of bonds by diving the number in step 3 by 2(because each bond is made of 2 e-)

8e-/2= 4 bond pairs

Step 5: Find the number of nonbonding (lone pairs) e-. Subtract step 3 number from step 1.

36-8= 28e-=14 lone pairs

Use information from step 4 and 5 to draw the lewis structure.



Lewis dot structure of XeF4