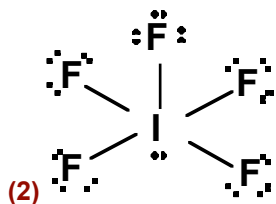


10. Draw the Lewis structure for IF_5 . The molecular geometry is:

- 1) square planar 2) square pyramidal 3) trigonal bipyramidal
 4) octahedral 5) none of the above



OWL 9-xx

11. The molecule IF_5 is:

- 1) polar 2) nonpolar 3) can't tell

(1) polar – the individual dipoles cancel out. OWL 9-10b

12. In IF_5 , what is the hybridization on I?

- 1) sp^3d^3 2) sp^3d^2 3) sp^3d 4) sp^3 5) sp^2

(2) OWL 9-xx

13. The picture at right depicts which type of orbital hybridization?

- 1) sp 2) sp^2 3) sp^3 4) sp^4
 5) none of the above



(1) from OWL 10-2b

14. In the orbital hybridization *above*, how many atomic orbitals were used to create the resulting molecular orbitals?

- 1) 1 2) 2 3) 3 4) 4 5) 5

(2) from OWL 10-2b

15. A molecule has sp^3d hybridization with one lone pair. The **electron pair geometry** of this molecule is:

- 1) tetrahedral 2) octahedral 3) linear
 4) square pyramidal 5) trigonal bipyramidal

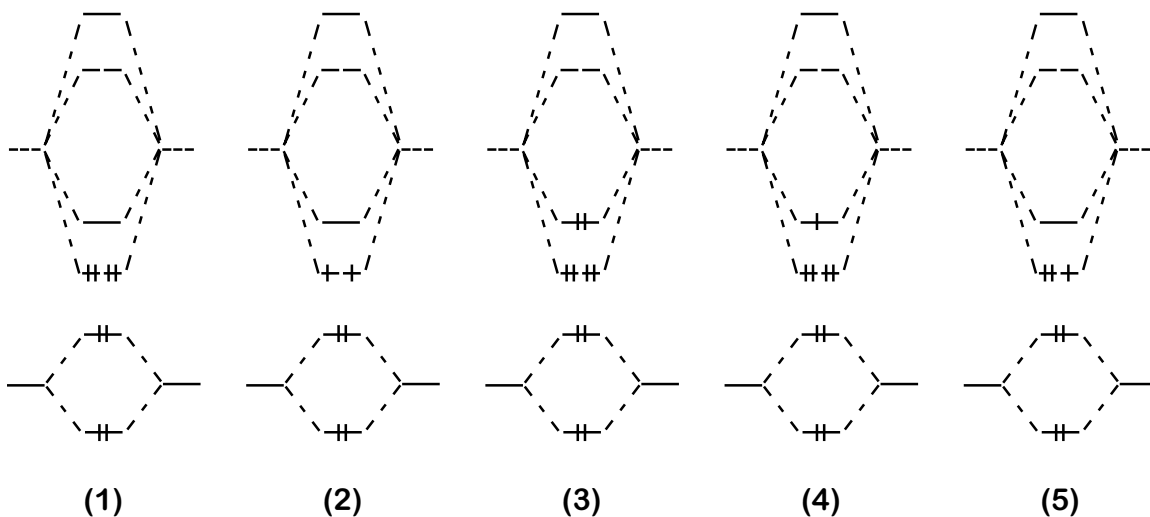
(5) from OWL 10-2b

16. What hybrid orbitals make up the sigma bond between **C1** and **C2** in propylene, **CH₂CHCH₃**?

- 1) sp & sp^3 2) sp & sp^2 3) sp^2 & sp^3 4) sp^2 & sp^2 5) sp^3 & sp^3

(4) – from OWL 10-2c

17. Which of the following molecular orbital representations correctly describes N_2^+ ?



(4) – nine electrons – from OWL 10-5c

18. From molecular orbital theory, the bond order in N_2^+ is:

- 1) single 2) double 3) 0.5 4) 1.5 5) 2.5

(5) 3.5 bonding, 1 antibonding – from OWL 10-5c

19. Consider the molecular orbital diagram shown at right:

This energy diagram best describes:

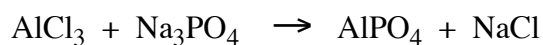
- 1) O_2 2) NO^- 3) NO^+ 4) N_2

(3) count electrons!! – from OWL 10-5c w/ a minor twist

Note that O is more electronegative, and therefore lower in energy, than N (O is on the right). OWL 10-xx



23. Write the balanced, *net ionic equation* corresponding to the unbalanced equation:



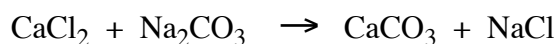
The coefficient in front of Na^+ (aq) is:

- 1) 1 2) 2 3) 3 4) 4
5) 0 (Na^+ doesn't occur in the net ionic equation)



(5) Na⁺ cancels out of the net ionic equation OWL 10-xx

24. Write the balanced, *net ionic equation* corresponding to the unbalanced equation:



In the net ionic equation, the coefficient in front of Ca^{2+} (aq) is:

- 1) 1 2) 2 3) 3 4) 4
5) 0 (Ca^{2+} doesn't occur in the net ionic equation)



25. The correct designator for this course is:

- 1) Econ 3.33 2) Chem 363 3) Chem 111 4) Sports 01

(3)

