

US 1063 Exam 3. January 19, 2007

Name _____

You must show all work for credit. By submitting this assignment, I certify that I have neither given nor received unauthorized aid.

Useful Information: $\lambda\nu=c$, $c=3,00 \times 10^8$ m/s

(1)(4 points) Draw the best Lewis dot structure(s) for PO_4^{3-} . Remember formal charge considerations and draw any resonance contributors

(2)(10 points) Draw the Lewis dot structures for the following species. Draw the 3D structure (VSEPR), give the name of the geometry, and the bond angles.

(a) PF_6^-

(b) SiP^-

(c) NH_3

(d) AlH_3

(e) BeI_2

(3)(10 points) List the hybridization of the central atom for each of the following species. Draw a sketch of the bonding (valence bond sketch).

(a) PF_6^-

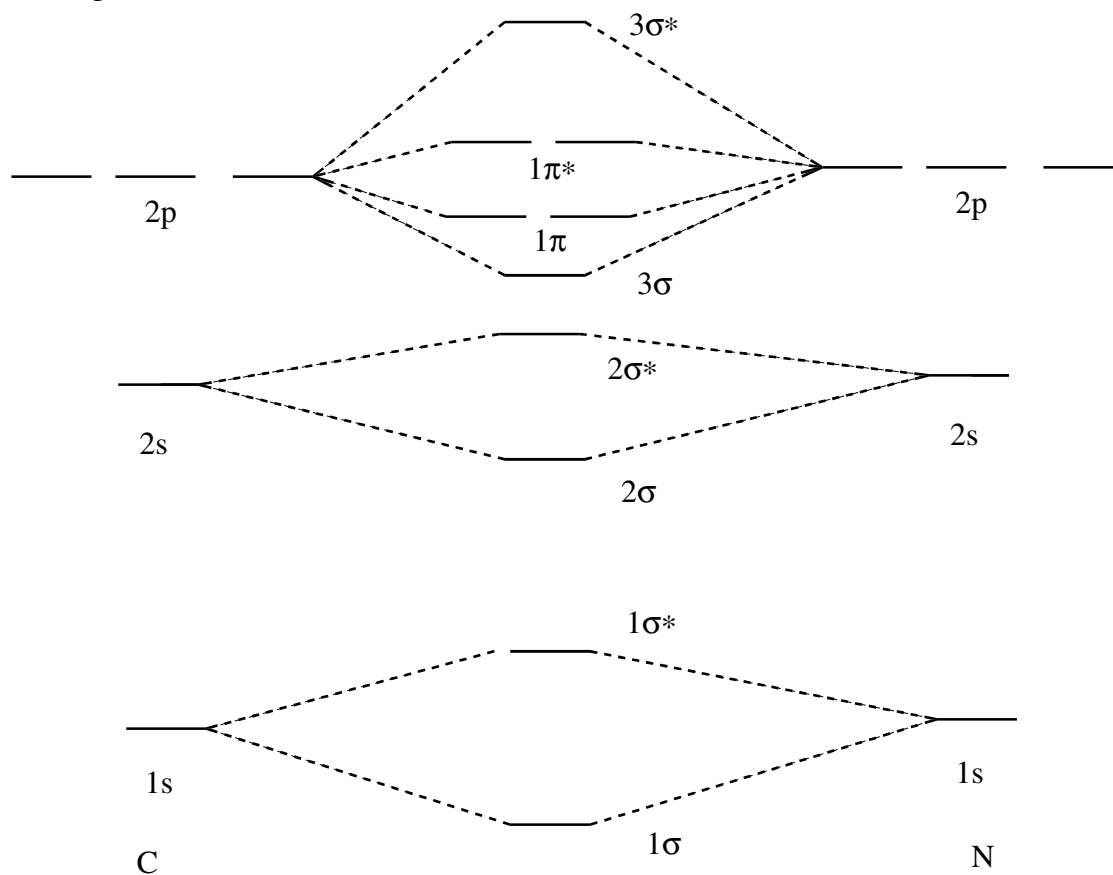
(b) SiP^-

(c) NH_3

(d) AlH_3

(e) BeI_2

(4)(10 points)



- (a) What is the ground state electron configuration of CN?
- (b) What is the bond order of CN?
- (c) What should have a shortest bond distance, CN, CN⁺ or CN⁻?

(5)(4 points) Using the MO diagram in problem 12, write the ground state molecular orbital configurations for the following diatomic molecules and ions.

(a) NO⁻

(b) OF