

AP MULTIPLE CHOICE QUESTIONS  
CH. 9, SET 1

1984

40. The geometry of the  $\text{SO}_3$  molecule is best described as  
(A) trigonal planar (D) bent  
(B) trigonal pyramidal (E) tetrahedral  
(C) square pyramidal

51. Pi ( $\Pi$ ) bonding occurs in each of the following except  
(A)  $\text{CO}_2$  (D)  $\text{C}_6\text{H}_6$   
(B)  $\text{C}_2\text{H}_4$  (E)  $\text{CH}_4$   
(C)  $\text{CN}^-$

66. Ca, V, Co, Zn, As  
Gaseous atoms of which of the elements above are paramagnetic?  
(A) Ca & As only (D) V, Co & As only  
(B) Zn & As only (E) V, Co & Zn only  
(C) Ca, V & Co only

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Qs 1 – 4

- (A) Heisenberg uncertainty principle  
(B) Pauli exclusion principle  
(C) Hund's rule (principle of maximum multiplicity)  
(D) Shielding effect  
(E) Wave nature of matter
1. Can be used to predict that a gaseous carbon atom in its ground state is paramagnetic.
  2. Explains the experimental phenomenon of electron diffraction.
  3. Indicates that an atomic orbital can hold no more than 2 electrons.
  4. Predicts that it is impossible to determine simultaneously the exact position and the exact velocity of an electron.

Qs 8 – 10 refer to the following diatomic species.

- (A)  $\text{Li}_2$  (B)  $\text{B}_2$  (C)  $\text{N}_2$  (D)  $\text{O}_2$  (E)  $\text{F}_2$
8. has the largest bond dissociation energy
  9. has a bond order of 2
  10. contains 1 sigma ( $\sigma$ ) and 2 pi ( $\pi$ ) bonds

15. In a molecule in which the central atom exhibits  $\text{sp}^3\text{d}^2$  hybrid orbitals, the electron pairs are directed towards the corners of  
(A) a tetrahedron (D) a square  
(B) a square-based pyramid (E) an octahedron  
(C) a trigonal bipyramid

6.  $\dots\text{Ag}^+(\text{aq}) + \dots\text{AsH}_3(\text{g}) + \dots\text{OH}^-(\text{aq})$   
 $\dots\text{Ag}(\text{s}) + \dots\text{H}_3\text{AsO}_3 + \dots\text{H}_2\text{O}(\text{l})$   
When the equation above is balanced with lowest whole-number coefficients, the coefficient for  $\text{OH}^-$  is  
(A) 2 (D) 6  
(B) 4 (E) 7  
(C) 5

54. All of the following statements concerning the characteristics of the halogens are true EXCEPT:  
(A) The first ionization energies (potentials) decrease as the atomic numbers of the halogens increase.  
(B) Fluorine is the best oxidizing agent.  
(C) Fluorine atoms have the smallest radii.  
(D) Iodine liberates free bromine from a solution of bromide ion.  
(E) Fluorine is the most electronegative of the halogens.