Choose the one best statement.

(a)  has 4 electron pairs, geometry of electrons is tetrahedral, geometry of molecule is trigonal pyramidal

(b)  has 4 electron pairs, geometry of electrons is ~~bent~~ tetrahedral, geometry of molecule is bent

(c)  SeF_6 has 6 electron pairs, geometry of electrons is octahedral, geometry of molecule is octahedral

(d)  has 3 electron pairs, geometry of electrons is ~~tetrahedral~~ planar, geometry of molecule is ~~trigonal pyramidal~~ trigonal planar

(e) statement (b) + (d) are incorrect

In the molecule SF_6 the hybridization of the S is _____ (S valence electron is $3s^2$, $3p^4$ and empty 3d orbitals)

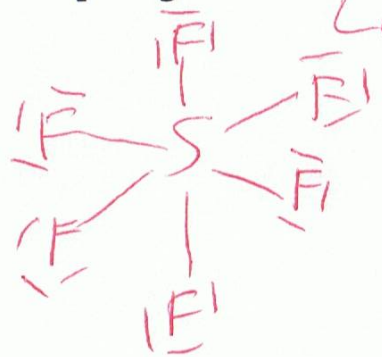
a. sp

b. sp^2

c. sp^3

d. sp^3d

e. sp^3d^2



Lewis Dot structure

S has 6 e pairs around it

VSEPRT table is sp^3d^2

normal S: 1↓ 1↓ 1 1 _ _ _ _ _
3s 3p 3d(empty)

promote 2e into empty d

1 1 1 1 1 _ _ _
3s 3p 3d

hybridize

1 1 1 1 1 1 _
sp^3d^2 d(empty)

In the ideal gas equation PV = nRT, (where R = 0.08206 liter atm/mol K) choose the one best statement.

a. P stands for pressure (in atmosphere)
b. V stands for volume (in liter)
c. n stands for moles of the gas
d. T stands for temperature (in Kelvin)
e. All statements are true.

Find the temperature of a 1.2 mol gas, in a 350 mL volume at pressure = 750 torr. Choose the best statement.

a. To get temperature you would use the equation PV=nRT and R=0.08206 (L atm)/(mol K), P=750 torr * (1 atm / 760 torr), V= 350 mL x (1L /1000 mL)

since question only has 1 volume, 1 pressure — probably ideal gas law not combined gas law

a. To get temperature you would use the equation $(P_1V_1) / T_1 = (P_2V_2) / T_2$ and use T in Kelvin, P in atmosphere and V in Liters

For $CH_4 + 2O_2 \rightarrow CO_2 + 2\ H_2O$ if you start with 14.2 g of CH_4 ($\mathcal{M} = 16.05$ g/mol), what volume of O_2 will you use up at STP (T=0°C, P= 1 atm), choose the one **incorrect** statement.

a. You would use V=(nRT)/P, R=0.08206 (L atm)/(mol K) (this equation is from PV=nRT)

b. n for O_2 can be calculated as shown

mol O_2 (n) = 14.2 g CH_4 *(mol CH_4/16.05 gCH_4)

*(1 mol O_2/1 mol CH_4) in the reaction above so this should be (2 mol O_2 / 1 mol CH_4)

1 mol CH_4 reacts with 2 moles of O_2

c. You will plug in P= 1 atm, T=0°C + 273.15