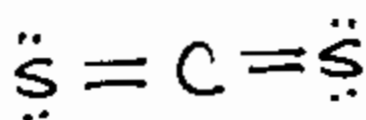


Quiz 6A
11 points

Name KEY
Maleckar/960/Fall 2009

1. Given the molecules below, what are their molecular shapes? What is the hybridization of the central atoms in each structure and the approximate bond angles around the central atoms? You aren't required to draw the Lewis structures here, but you may find it to be helpful.

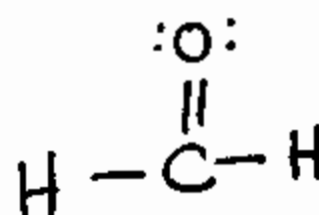


Molec. Shape: linear 1pt

Hybridization: sp 1pt

App. Bond Angles 180° 1pt

Polar or Nonpolar? nonpolar 1pt



Molec. Shape: trigonal planar 1pt

Hybridization: sp² 1pt

App. Bond Angles 120° 1pt

Polar or Nonpolar? polar 1pt

Would you expect these two substances to be soluble in each other or not? no 1pt

2. A triple bond consists of:

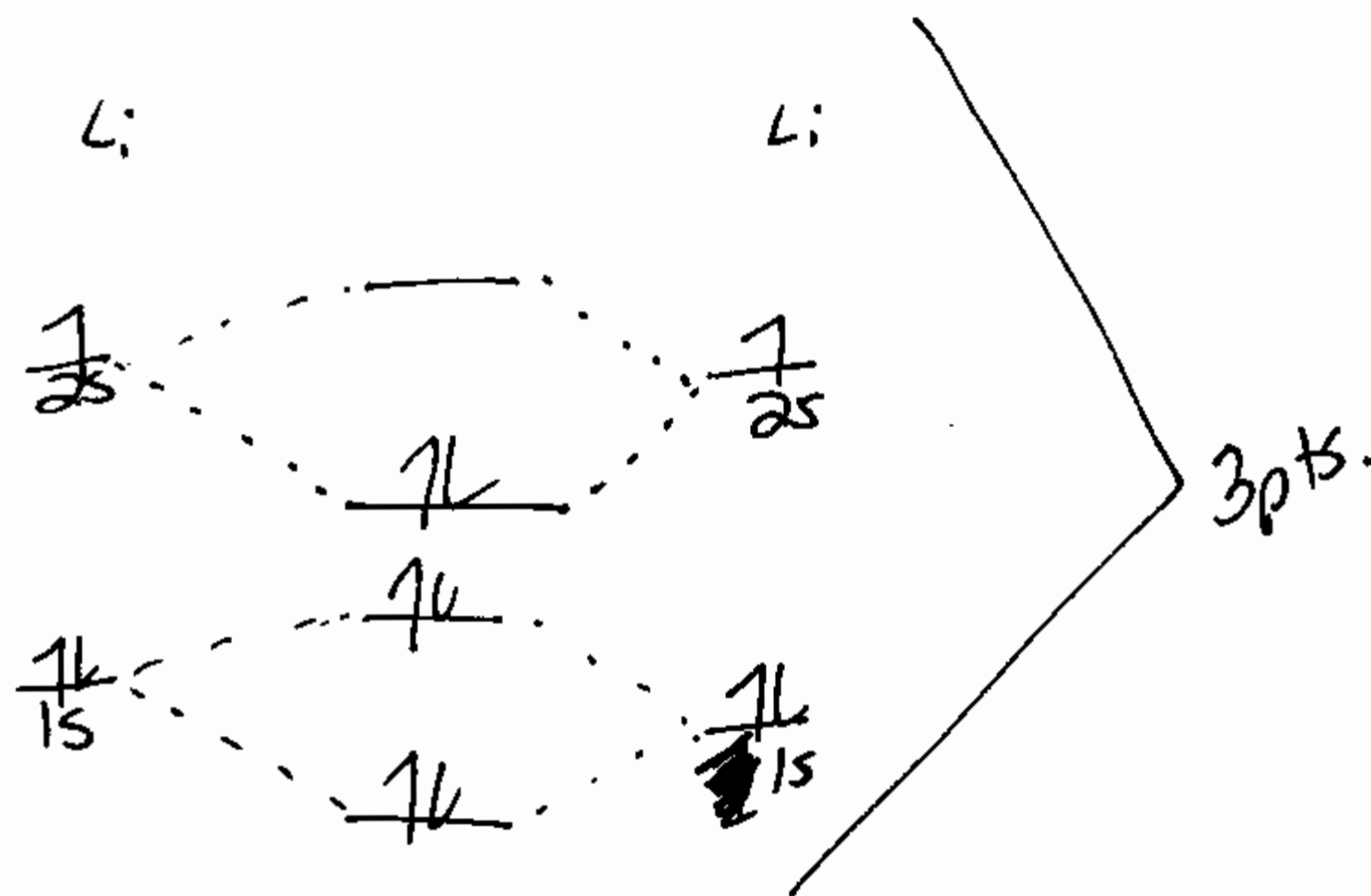
- A. one π bond and 2 σ bonds
- B. one σ bond and two π bonds
- C. three σ bonds
- D. six shared electron pairs
- E. three π bonds

2pts.

Quiz 6B
11 points

Name KEY
Maleckar/960/Fall 2009

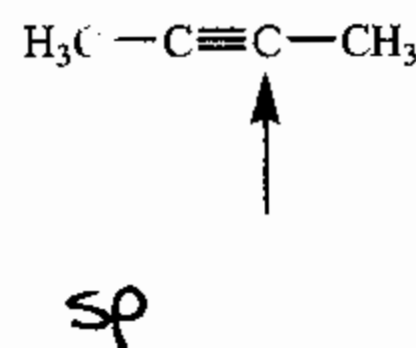
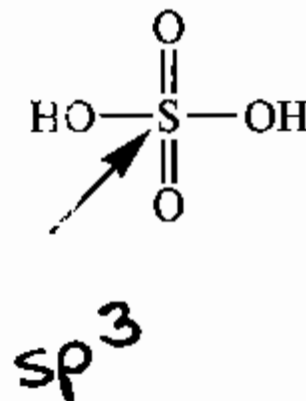
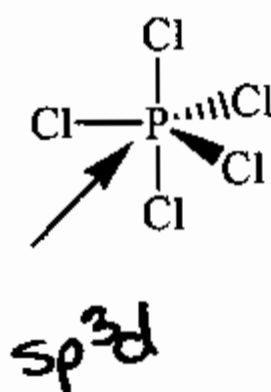
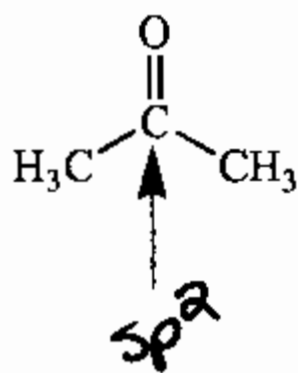
1. Draw the molecular orbital diagram for Li_2 . Include all of the electrons for each Li, not just the valence electrons.



2. What is the bond order of Li_2 ? 1 1pt

Is Li_2 paramagnetic or diamagnetic? diamagnetic 1pt

3. Give the hybridization of the atoms indicated in each structure below.



4. A double bond is made up of _____.

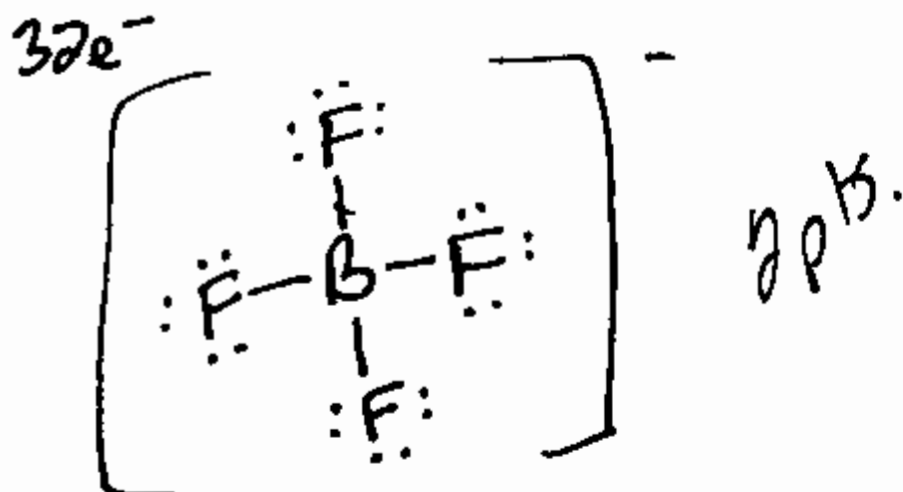
- A. 2 σ bonds
 B. 2 π bonds
 C. 1 σ bond and 2 π bonds
 D. 1 σ bond and 1 π bond
 E. none of the above

2pts.

Quiz 6C
11 points

Name KEY
Maleckar/960 Fall 2009

1. Draw the Lewis Dot structure for BF_4^- .



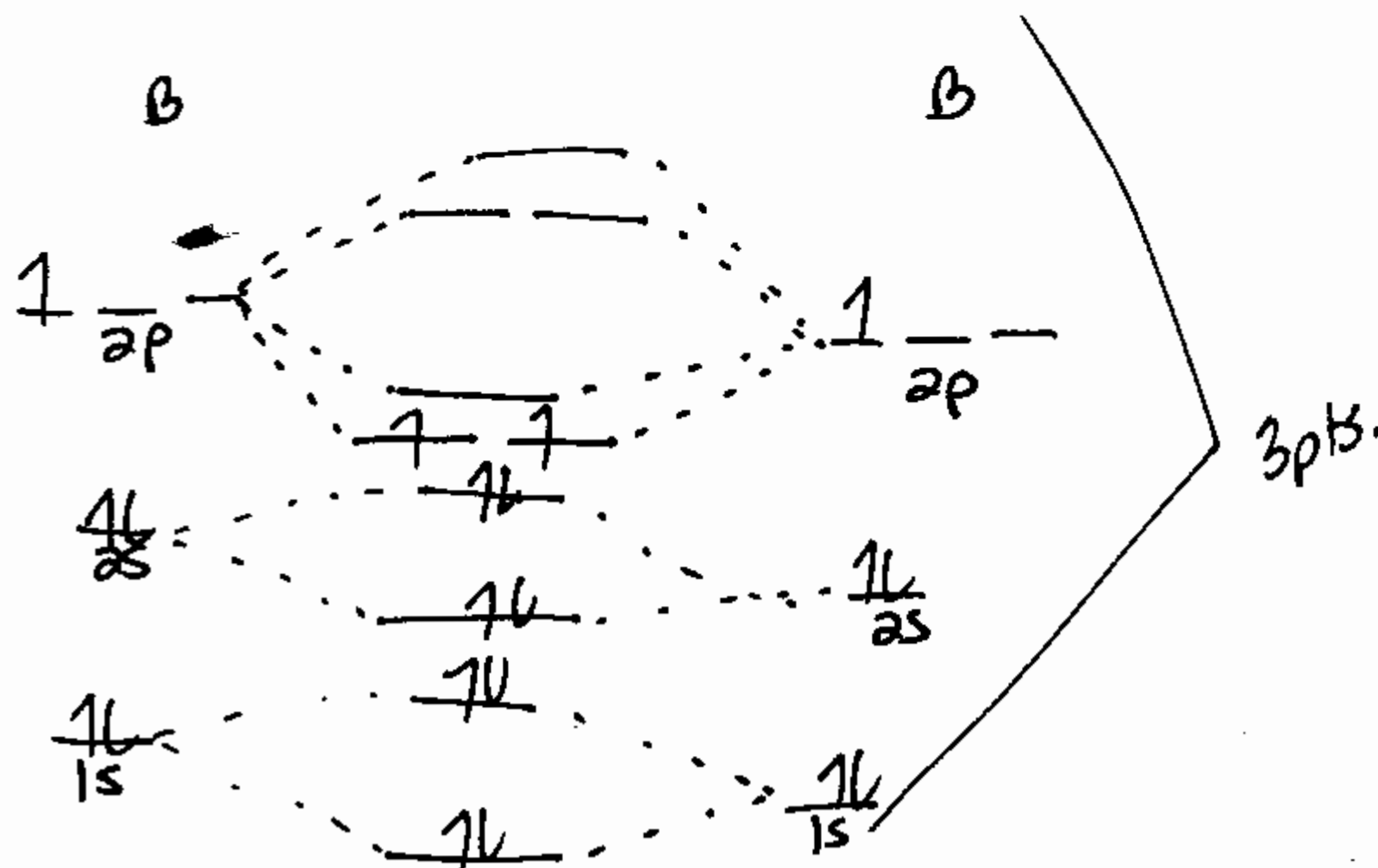
What is the electron domain shape? tetrahedral 1pt

What is the molecular shape? tetrahedral 1pt

What is the hybridization of the **B** in this compound? sp^3 1pt

Approximate bond angles? 109.5° 1pt

2. Draw the molecular orbital diagram for B_2 .



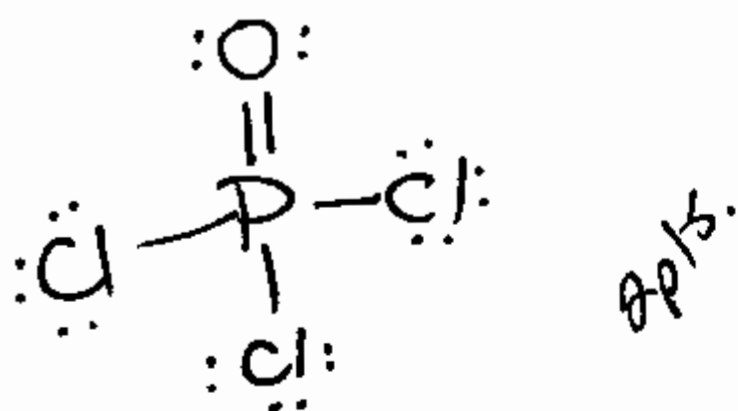
What is the bond order for B_2 ? 1 1pt

Is B_2 paramagnetic or diamagnetic? paramagnetic 1pt

Quiz 6D
11 points

Name KEY
Maleckar/9/30/Fall 2009

1. Draw the Lewis dot structure for POCl_3 and answer the questions.



What is the hybridization of the P in POCl_3 ? sp^3 1pt

What are the approximate bond angles in POCl_3 ? 109.5° 1pt

What is the shape of the electron domains in POCl_3 ? tetrahedral 1pt

What is the molecular shape of POCl_3 ? tetrahedral 1pt

How many σ bonds are in this structure? 4 1pt

How many π bonds are in this structure? 1 1pt

Is POCl_3 polar or nonpolar? polar 1pt

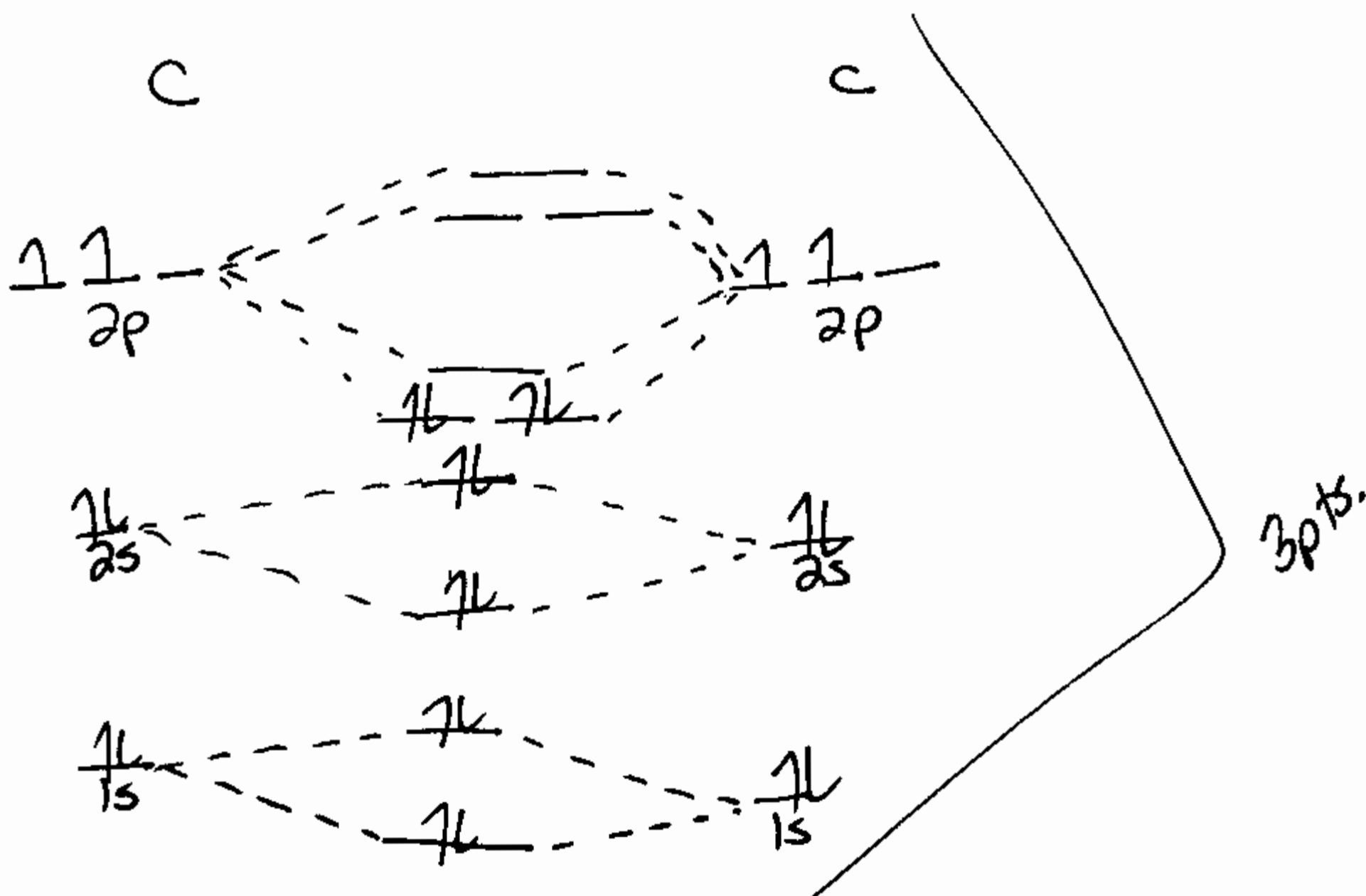
Would you expect POCl_3 to be soluble in water or not? ~~no~~ yes 1pt

Does POCl_3 have a dipole? yes 1pt

Quiz 6E
11 points

Name KEY
Maleckar/960/Fall 2009

1. Draw the molecular orbital diagram of C_2 . Use all of the electrons, not just the valence electrons.



What is the bond order in C_2 ? 2 1pt

Is C_2 paramagnetic or diamagnetic? diamagnetic 1pt

2. What is the hybridization of the S in SO_3 ? sp^2 1pt

What is the molecular shape of SO_3 ? trigonal planar 1pt

What are the approximate bond angles in SO_3 ? 120° 1pt

Is SO_3 polar or nonpolar? nonpolar 1pt

How many σ bonds are in SO_3 ? 3 1pt

How many π bonds are in SO_3 ? 3 1pt

