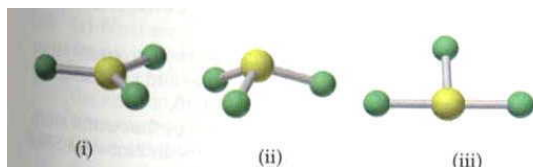


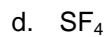
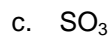
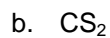
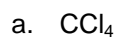
AP Chemistry: Polarity of Polyatomic Molecules

For each problem below, write the equation and show your work. Always use units and box in your final answer.

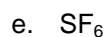
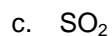
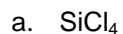
1. Consider the AF_3 molecules in Figure 9.43. Which of these will have a nonzero dipole moment? Explain.



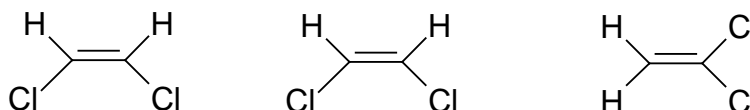
2. Will the following molecules be polar or nonpolar:



3. Predict whether the following molecules are polar or nonpolar:

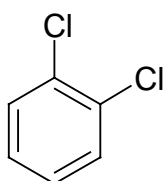


4. Dichloroethylene, $\text{C}_2\text{H}_2\text{Cl}_2$, has the following geometries (isomers), each of which is an individual substance:

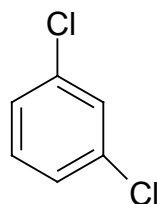


A pure sample of one of these substances is found experimentally to have a dipole moment of zero. Can you determine which of the three substances was measured?

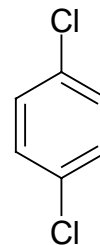
5. Dichlorobenzene, $\text{C}_6\text{H}_4\text{Cl}_2$, exists in three different forms (isomers), called *ortho*, *meta*, and *para*:



ortho



meta



para

Which of these would have a nonzero dipole moment?

Explain.