

**Answers**

1. Complete the following table: (12 points)

Molecule	Lewis Structure	Electron Pair Geometry & Molecular Geometry	Bond Angle(s)	Polar or Nonpolar?
<b>ICl<sub>2</sub>Br</b>	<b>I in middle, 2 lone pairs on I, Cl-I-Cl has 180 angle</b>	<b>EPG = trigonal bipyramid MG = T-shaped</b>	<b>90, 180</b>	<b>polar</b>
<b>SeBr<sub>4</sub></b>	<b>Se in middle, 1 lone pair on Se, lone pair in "plane" of molecule</b>	<b>EPG = trigonal bipyramid MG = see-saw</b>	<b>90, 120, 180</b>	<b>polar</b>
<b>IF<sub>5</sub></b>	<b>I in middle, 1 lone pair on I,</b>	<b>EPG = octahedral MG = square pyramid</b>	<b>90, 180</b>	<b>polar</b>

2. Complete the following table: (6 points)

Molecule	Lewis Structure	Bond Order	Which structure has stronger bonds?	Which structure has longer bonds?	Does it exhibit resonance?
<b>PO<sub>2</sub><sup>-1</sup></b>	<b>P in middle, 1 lone pair on P, one double bond to O, one single bond to O</b>	<b>1.5</b>		<b>longer</b>	<b>yes</b>
<b>PO<sub>2</sub><sup>+1</sup></b>	<b>P in middle, 0 lone pair on P, two double bonds to O,</b>	<b>2</b>	<b>stronger</b>		<b>no</b>

3. Arrange the following bonds in order of increasing polarity: Na-Br, Br-Br, N-Br, As-Br. (2 pts)

**Br-Br, As-Br, N-Br, Na-Br**