1. For the molecules or molecular ions in the problem above, give the formula type (Example: AX,E), the steric number (SN), indicate the geometry (Example: bent), and give expected bond angles.

<table>
<thead>
<tr>
<th>Compound</th>
<th>Formula Type</th>
<th>SN</th>
<th>Geometry</th>
<th>Bond angle(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) AlCl₄⁻¹</td>
<td>AX₄</td>
<td>4</td>
<td>Tetrahedral</td>
<td>109.5°</td>
</tr>
<tr>
<td>(b) XeF₅⁺⁺</td>
<td>AX₅E₂</td>
<td>5</td>
<td>T-Shaped</td>
<td>&lt;90°</td>
</tr>
<tr>
<td>(c) PCl₆⁻¹</td>
<td>AX₆</td>
<td>6</td>
<td>Octahedral</td>
<td>90°</td>
</tr>
<tr>
<td>(d) IF₅</td>
<td>AX₅E</td>
<td>6</td>
<td>Square Pyramidal</td>
<td>&lt;90°</td>
</tr>
</tbody>
</table>

2. For each of the following molecules, write the Lewis structure and predict whether each molecule is polar or nonpolar:
   (a) NH₃
   (b) BF₃
   (c) OF₂
   (d) IF₃

Note that you do not need to indicate formal charges (FC) on your Lewis structures, but you should consider FC to draw most stable Lewis structures.

a) NH₃ is polar  
\[
\begin{array}{c}
\text{H} \\
\text{N} \\
\text{H} \\
\end{array}
\]

b) BF₃ is nonpolar  
\[
\begin{array}{c}
\text{F} \\
\text{B} \\
\text{F} \\
\end{array}
\]

c) OF₂ is polar  
\[
\begin{array}{c}
\text{F} \\
\text{O} \\
\text{F} \\
\end{array}
\]

d) IF₃ is polar  
\[
\begin{array}{c}
\text{F} \\
\text{I} \\
\text{F} \\
\end{array}
\]