Give an example of five species (ions and/or atoms) that are isoelectronic.

Write the electronic configuration for the following species. You may use the noble gas shortcut notation if you wish.

In

Se$^{2-}$

Os

Ba$^{2+}$

At

Arrange the following species in decreasing order of radius (large to small).

In, P, Ge, F, Ba

Arrange the following species in decreasing order of electronegativity (large to small).

I, F, Br, Cl, Cs
a. The elements of which group on the periodic table have electron configurations which end in ns²np³ where n could be 2, 3, 4, 5, or 6.

b. What would be the charge on the ions formed by the nonmetallic members of the above group in the periodic table?

c. The nonmetallic ions (given the symbol N here) of the above named group would react with the alkaline earth elements (given the symbol M here) to form compounds of which general formula: MN, M₂N, M₂N₂, M₃N₂, M₃N, or MN₃?

6. As was discussed in class, atoms typically get smaller in radius as one moves from the left to the right on the periodic chart. Explain the reasoning regarding why this trend occurs.

7. The actual electron configuration for Mo is [Kr]5s¹4d⁵. Give the expected electron configuration based on the standard filling of electrons into orbitals and describe why the actual electron configuration of Mo is different than the expected.
8. Fill in the missing information in the following table. Use the back of your periodic chart as scrap paper if you wish.

<table>
<thead>
<tr>
<th>Species</th>
<th>Lewis Structure</th>
<th>Electron Domain Geometry</th>
<th>Molecular Geometry</th>
<th>Polar or Nonpolar</th>
<th>Hybridization - Central Atom</th>
<th>Formal Charges</th>
</tr>
</thead>
<tbody>
<tr>
<td>SF₄</td>
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<td></td>
<td>S: F:</td>
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<tr>
<td>NO₂</td>
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<td>N: O:</td>
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<tr>
<td>CO₃²⁻</td>
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<td>C: O:</td>
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<tr>
<td>XeF₄</td>
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<tr>
<td>HCN</td>
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<td></td>
<td></td>
<td>H: C: N:</td>
</tr>
</tbody>
</table>

Given Information: Trigonal bipyramid, Seesaw, T-shaped, Linear, Octahedral, Square pyramidal, Square planar