1. The Figure below shows the first ionization of a sequence of eight atoms from the

Periodic Table, but not necessarily from the same row. The other given is that N, O and

F occur within the run. Identify all elements involved. Explain your reasoning, and

explain why the ionization energies of atoms X, Y and Z all appear as local minima in the

overall sawtooth pattern.



1. Why does the first ionization energy increase in the following order?

Al< Ga < B

1. The entropy of hydration becomes more negative from Na+ to Mg2+ to Al3+ though the

coordination number is probably 6 in each case. Account for the trend in disorder.

S◦ 298 (J mol-1 K-1) : Na+(aq), 60.3; Mg2+(aq), -138; Al3+(aq), -322.