

Assignment Entropy I: Answers

Question	Answers
1.a)	Occured instantly and on its own.
1.b)	Occured without external aid.
2.a)	Enthalpy and entropy. A negative enthalpy causes spontaneity as well as a positive entropy change. And these two sometimes-conflicting factors combine in Gibbs Free Energy where a negative "G" means spontaneity with the equation.
2.b)	Enthalpy of dissolution can be either exo or endo depending on the solute compound. But the reason here is that solids dissolved in water changes the solid to aqueous which means an increase in entropy which means spontaneity. But gas dissolved in liquid changes a gas to aqueous with less ways to distribute energy thus a decrease in entropy. Hence, not spontaneous means less soluble as it requires more external energy.
3a)	negative
3b)	negative
4a)	-551.53 J/mol K
4b)	-267.19 J/mol K
4c)	114.5 J/mol K
4d)	+ 32.6 J/mol K
4e)	- 90.64 J/mol K
5)	+ 1 239J/mol K
6)	Both negative
7)	It is entropy driven because the enthalpy change is positive thus is anti-spontaneous. Therefore for it to occur entropy must be positive to cause the reaction to occur readily.
8. a)	+ 128.83kJ/mol
8. b)	+ 48.2kJ/mol The ionic radii of Mg ²⁺ is smaller than Ca ²⁺ . Thus has stronger electrostatic forces/ionic bonds. Hence it is more stable.