(Another) 50 (tiny) things to remember during the AP chemistry exam

1. Organic amines like methylamine, CH3NH2, are weak bases since the lone pair on the N atom can accept H+.

2. Nickel (II) salts are green.

3. Positive Ecell values go with negative ∆G values and very large K values.

4. When [H+] in solution is < [OH–] the solution is basic (and vice-versa).

5. When [H+] = [OH–] the solution is neutral.

6. A large Rf value suggests that the component has a high affinity for the mobile phase.

7. Beers’ law can only be applied to colored salts.

8. In dynamic equilibrium, the forward and backward reactions do not stop, they just occur at the same rate.

9. When considering macro changes in entropy, look at how the number of gas moles change.

10. Delta H = SUM Enthalpy products – SUM Enthalpy of reactants, ONLY works if you are dealing with FORMATION enthalpies.

11. Two phases exist on the horizontal part of a cooling or heating curve.

12. Oxygen re-lights a glowing splint.

13. Equilibrium constants are constant at constant temperature.

14. Ionic solids have strong ionic bonds that are electrostatic (Coulombs law) and as a result have high melting and boiling points.

15. Changing phase in molecular substance involves breaking IMF’s, NOT covalent bonds.

16. Capillary action and surface tension can be explained in terms of intermolecular forces.

17. Si and SiO2 have giant structures similar to diamond.

18. Si and As are used in semi-conductors.

19. The dependence of the rate constant on activation energy and temperature is explained by the Arrhenius equation.

20. Hydrogen fluoride is a weak acid.

21. Hydrogen fluoride etches glass.

22. CFC’s (chlorofluorocarbons) are implicated in climate change.

23. An exothermic reaction does work on the surroundings.

24. Ozone is O3.

25. STP for gases is **273 K** and 1 atm.

26. ‘Standard’ conditions in thermochemistry usually means 298 K.

27. Kinetic energy of gases depends on their Kelvin temperature.

28. The mass spectrum of a monotomic element contains a peak for each isotope.

29. Sulfur can exist as S8 molecules and phosphorus can exist as P4 molecules.

30. Pure solids, liquids and gases are never ionized in NIE’s, but soluble salts and strong acids and bases IN SOLUTION, are.

31. When considering valence electrons of p block elements, remember to include the outer s electrons as well (e.g., Al has 3 valence electrons, s2 and p1)

32. B and O, and Al and S, have slightly lower first ionization energies than we expect, but for different reasons.

33. Conjugate acid and base pairs differ in their formula only by H+.

34. A very strong acid (e.g., HCl) will have a very weak conjugate base (Cl–).

35. Add concentrated acids and bases to large volumes of water, NOT the other way around.

36. Carbon dioxide makes limewater milky.

37. Heat is a transfer of energy from a high energy system, to a low energy system, in order to ultimately achieve thermal equilibrium.

38. The Delta H for the *formation* of an element is zero (nothing changes).

39. The Delta S for the *formation* of an element is zero (nothing changes).

40. …BUT elements have ABSOLUTE entropies that are NOT zero.

41. Catalysts provide different mechanisms/pathways that have lower activation energies.

42. Before weighing on electronic balances, allow heated items to cool.

43. Beakers and Erlenmeyer flasks are NOT measuring instruments.

44. Transition metals often have salts which are colored.

45. Group 1 oxide + water gives corresponding hydroxide which is soluble.

46. Group 1 metal + water gives corresponding hydroxide which is soluble AND hydrogen gas.

47. Group 1 hydride + water gives corresponding hydroxide which is soluble AND hydrogen gas.

48. Equilibrium systems that undergo changes in pressure should only have their gas molecules considered.

49. Remember to filter, wash and dry a precipitate in a gravimetric analysis.

50. The TOTAL area under a Boltzmann distribution curve is the same for a reaction at a high and a low temperature.