

# CHEM 255 Final Exam 2011

## Possible Exam Topics

1. Significant Figures
2. Mean, Standard Deviation
3. Propagation of Uncertainty
4. Linear Regression
5. T-test
6. Q-test
7. Confidence levels
8. Area Beneath a Gaussian Curve
9. Equilibria
10. Solubility
11. Common Ion Effect
12. Ionic Strength
13. Activity Coefficients
14. Monoprotic acids and bases-equilibrium
15. pH determination
16. Mass Balance / Charge Balance
17. Fraction of Association
18. Fraction of Dissociation
19. pH of diprotic acids/bases
20. pH of polyprotic acids/bases
21.  $\alpha$ -fractions
22. Monoprotic buffers
23. Polyprotic buffers
24. Buffer Capacity
25. Titration of strong acids/bases

26. Titration of weak monoprotic acids/bases
27. Titration of weak polyprotic acids/bases
28. Precipitation titrations
29. Spectroscopy terms and calculations
30. Beer's law
31. Calibration curves
32. Standard addition
33. Internal standards
34. Analysis of mixtures
35. Scatchard plots-Equilibrium constants
36. Applications of Spectroscopy
37. Atomic Spectroscopy
38. Electrochemistry
39. Nernst equation and cell potentials
40.  $E^0$  and K relationship
41. Redox titrations
42. Ion electrodes
43. Blood Glucose monitors
44. Voltammetry
45. Separations –terms and concepts
46. Separation calculations (partition coefficients, distribution coefficients, capacity factor, relative retention, Resolution, Number of plates, etc.)
47. Scaling up a separation
48. Band Broadening – van Deemter Equation
49. GC concepts/instruments
50. LC concepts/instruments
51. Electrophoresis concepts/instruments