

CHEM 255
Spring 2011
Final Exam Equation Sheet

$$\bar{x} = \frac{\sum x_i}{n} \quad s = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n-1}}$$

$$s_{\text{pooled}} = \sqrt{\frac{s_1^2(n_1 - 1) + s_2^2(n_2 - 1)}{n_1 + n_2 - 2}}$$

$$\mu = \bar{x} \pm \frac{ts}{\sqrt{n}} \quad t_{\text{calc}} = \frac{\bar{x}_1 - \bar{x}_2}{s_{\text{pooled}}} \sqrt{\frac{n_1 n_2}{n_1 + n_2}}$$

$$t_{\text{calc}} = \frac{|\text{known value} - \bar{x}|}{s} \sqrt{n}$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$m = \frac{n \sum x_i y_i - \sum x_i \sum y_i}{n \sum (x_i^2) - (\sum x_i)^2} \quad b = \frac{\sum (x_i^2) \sum y_i - \sum x_i \sum x_i y_i}{n \sum (x_i^2) - (\sum x_i)^2}$$

$$\log \gamma = \frac{-0.51z^2 \sqrt{\mu}}{1 + \left(\frac{\alpha \sqrt{\mu}}{305} \right)}$$

$$\frac{[X]_i}{[X]_f + [S]_f} = \frac{A_{Xi}}{A_{Xf}}$$

$$\frac{\begin{pmatrix} [X]_{\text{unknown}} \\ [S]_{\text{known\#2}} \end{pmatrix}}{\begin{pmatrix} [X]_{\text{known}} \\ [S]_{\text{known}} \end{pmatrix}} = \frac{\begin{pmatrix} A_{X\text{unknown}} \\ A_{S\text{known\#2}} \end{pmatrix}}{\begin{pmatrix} A_{X\text{known}} \\ A_{S\text{known}} \end{pmatrix}}$$

$$\frac{A_m}{A_{Xs}} = \frac{[Y]}{[Y]_s} \left(\frac{A_{Ys}}{A_{Xs}} \right) + \frac{[X]}{[X]_s}$$

$$[X] = \frac{\begin{vmatrix} A' & \varepsilon'_Y b \\ A'' & \varepsilon''_Y b \end{vmatrix}}{\begin{vmatrix} \varepsilon'_X b & \varepsilon'_Y b \\ \varepsilon''_X b & \varepsilon''_Y b \end{vmatrix}}$$

$$[Y] = \frac{\begin{vmatrix} \varepsilon'_X b & A' \\ \varepsilon''_X b & A'' \end{vmatrix}}{\begin{vmatrix} \varepsilon'_X b & \varepsilon'_Y b \\ \varepsilon''_X b & \varepsilon''_Y b \end{vmatrix}}$$

$$R_s = \frac{\sqrt{N}}{4} \left(\frac{\alpha - 1}{\alpha} \right) \left(\frac{k'_2}{1 + k'_{\text{avg}}} \right)$$