

$$F = \frac{kQ_1Q_2}{\epsilon r^2}$$

$$\text{pH} = \text{pK}_a + \log\left(\frac{[\text{A}^-]}{[\text{HA}]}\right)$$

$$K_{eq} = \frac{[\text{C}]^c [\text{D}]^d}{[\text{A}]^a [\text{B}]^b}$$

for the reaction : $a\text{A} + b\text{B} \rightarrow c\text{C} + d\text{D}$

$$R = 0.00831 \text{ kJ/mol} \cdot \text{K}$$

$$T(\text{in K}) = 273 + \text{temp in } ^\circ\text{C}$$

$$\mathcal{F} = 96.5 \text{ kJ/V} \cdot \text{mol}$$

$$K_a = \frac{[\text{P} \cdot \text{L}]}{[\text{P}] \times [\text{L}]}$$

$$K_d = \frac{[\text{P}] \times [\text{L}]}{[\text{P} \cdot \text{L}]}$$

$$\theta = \frac{[\text{L}]}{K_d + [\text{L}]}$$

$$\theta = \frac{p\text{O}_2}{P_{50} + p\text{O}_2}$$

$$V_o = \frac{V_{\max} [\text{S}]}{K_m + [\text{S}]}$$

Approximate pK_a values of ionizable groups of amino acids and peptides (side chains listed unless otherwise noted):

Aspartate: 4

Glutamate: 4

Histidine: 6

Cysteine: 8.5

Tyrosine: 10.5

Lysine: 10.5

Arginine: 12.5

Serine: 13

Threonine: 13

α -carboxyl of free amino acid: 2

α -amino of free amino acid: 9.5

C-terminal carboxyl of peptide: 3

N-terminal amino of peptide: 8

α -helix

100° rotation per residue

3.6 residues per turn

5.4 Å rise per turn

ideal dihedral angles: $\phi = -57^\circ$, $\psi = -47^\circ$

parallel β -sheet

repeat length = 6.5 Å (3.25 Å/residue)

ideal dihedral angles: $\phi = -119^\circ$, $\psi = +113^\circ$

antiparallel β -sheet

repeat length = 7 Å (3.5 Å/residue)

ideal dihedral angles: $\phi = -139^\circ$, $\psi = +135^\circ$

Fatty Acids

16:0 – palmitic acid

18:0 – stearic acid

18:1(Δ^9) – oleic acid

18:2($\Delta^{9,12}$) – linolenic acid

18:3($\Delta^{9,12,15}$) – α -linolenic acid

