

Chemistry & Biochemistry

Presentation guide

CC = Statement of the competence for a core competence

E = Elements of the competence for a specific statement of competence

P = Performance criteria for competency; associated with a specific element of the competence

Core Competence CC.2

Explain the principles of chemistry and biochemistry as they pertain to respiratory therapy

E.1 Explain each of the following basic chemical terms and concepts as they pertain to respiratory therapy

- P1.1 Element, Atom, Proton, Neutron, Electron, Valence and Isotope
- P1.2 Atomic Number, Atomic Weight, Molecular Weight and Avogadro's Law
- P1.3 Compound vs. Molecule
- P1.4 Ion, Cation, Anion, Electrolyte and Salt
- P1.5 Chemical Bonds - Ionic and Covalent
- P1.6 Oxidation and Reduction
- P1.7 Kinetic Energy, Potential Energy and Gradient
- P1.8 Anabolism and Catabolism
- P1.9 Organic vs. Inorganic Compounds
- P1.10 Equilibrium
- P1.11 Reversible Reaction
- P1.12 Law of Mass Action
- P1.13 Water as a Universal Solvent, Physical Characteristics of Water and Hydrogen Bonding
- P1.14 Hydrolysis Reaction
- P1.15 Dissociation
- P1.16 Enzyme
- P1.17 pH, Acid and Base
- P1.18 Cathode, Anode, Electrode, Voltage, Current and Resistance

E.2 Explain each of the following biochemical terms and concepts as they pertain to respiratory therapy

- P2.1 Mixture, Solution, Solvent, Solute, Crystalloid, Colloid and Suspension
 - P2.2 Strong Acid, Strong Base and pK
 - P2.3 Acidosis and Acidemia
 - P2.4 Alkalosis and Alkalemia
 - P2.5 Fixed Acid
 - P2.6 Volatile Acid
 - P2.7 Buffers – Chemical Buffers, Closed Buffer Systems and Open Buffer Systems
 - P2.8 Conjugate Base
 - P2.9 Amphoteric Compound or Molecule
 - P2.10 Law of Electroneutrality and Anion Gap
 - P2.11 Gradient, Diffusion, Osmosis, Facilitated Diffusion, Filtration and Active Transport Mechanisms
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