SCC BIO 246/Microbiology Pre-Assessment Topics and Terms: Updated March 2026

Students are expected be able to explain and provide context for the following:

General Science and Vocabulary Topics and Terms

1. Definitions and applications of length, mass, time, and volume
2. Metric units for length, mass, and volume
3. Conversion between metric units
4. Definitions of hydrophobic and hydrophilic and properties of these chemicals

Chemistry Topics

1. Chemical atomic arrangement and characteristics of subatomic particles
2. Chemical formulas of common biological chemicals including glucose, carbon dioxide, water, molecular oxygen, hydrochloric acid, sodium bicarbonate, and sodium chloride
3. Understanding of pH scale
4. Types of chemical bonds including hydrogen, covalent, and ionic
5. Distinction between polar and nonpolar covalent bonds
6. Hydrogen bonding and intermolecular interactions between water molecules
7. Basic properties of ions
8. Basic chemical reaction knowledge: products vs. reactants
9. Definitions: atomic number, atomic symbol, element, atom, mass number, molecule, compound
10. Definitions: solution, solvent, solute
11. Identification of common elements' atomic symbols
12. Behavior of salts, acids, and bases in solutions
13. Importance of carbon's bonding properties
14. Hydrolysis and dehydration synthesis reactions
15. Identification of chemicals that are water-soluble and lipid-soluble

Biology Topics

1. Structure, function, and monomers of biological macromolecules: nucleic acids, proteins, lipids, and carbohydrates
2. Gene structure and function
3. Comparing and contrasting active and passive transport processes including diffusion, osmosis & tonicity, and various types of active transport
4. Functions of various organelles and cellular structures such as: plasma membrane, cytoplasm, mitochondrion, ribosome, cilia, lysosome, Golgi apparatus, nucleus, smooth endoplasmic reticulum, rough endoplasmic reticulum, centrioles, microtubules, cytoskeleton
5. Cellular processes including: transcription, translation, DNA replication, cellular respiration
6. Understanding of permeability of the plasma membrane
7. Differences between intracellular and extracellular environments
8. Characteristics of metabolic processes
9. Effect of pH and temperature on protein shape