Ch. 1 Introduction
biophilia, levels of organization in nature (ie. organelle > cell > tissue > organ), abiotic, biotic, ecosystem, community, population, species, biosphere, properties of life, biodiversity, taxonomy, Linnaeus, levels of taxon (ie. Kingdom --> Phylum --> Class etc.), binomial name, Eukarya, Archae, Bacteria, 3 domains, human classification, evolution, natural selection, Darwin, examples of natural selection, scientific method, hypothesis, steps in forming a hypothesis, theory, variable, independent variable, dependent variable, experimental group, control group, ecology, food chain, autotrophs (producers), heterotrophs (consumers), energy flow

Ch. 2 Atoms, Molecules, Chemical Bonds
matter, element, CHNOPS, compound, molecule, atom, subatomic particle (proton, neutron, electron), atomic number, mass number (atomic weight), isotope, radioactive, advantages (uses) and disadvantages of isotopes, energy, potential vs. kinetic, ion, ionic bond, covalent bond (polar, nonpolar), hydrogen bond, chemical reactions

Ch. 3 Water & Ch. 4 Carbon
properties of water, hydrophilic, hydrophobic, acid, base, buffer, pH, ocean acidification, threat to Coral Reef Ecosystems?, Acid precipitation: caused by?, pH of?, biggest effect in which season? why?, how can acid rain be decreased?, properties of carbon, hydrocarbon, number of electrons in outer shell of carbon, functional groups, figure 4.2 on Stanley Miller

Ch. 5 Macromolecules
organic, monomer, polymer, condensation synthesis, hydrolysis, enzymes, 4 types of organic molecules & their functions (ie. carbohydrates, proteins etc.), carbohydrate (general formula), definition & examples of: monosaccharide, disaccharide, polysaccharide (starch, glycogen, cellulose, chitin) lipids, fatty acid, unsaturated, saturated, amphipathic, atherosclerosis, phospholipid, nucleic acid, nucleotide, DNA, RNA, nucleoside, A, T, G & C, protein, amino acid, R group (side chain), confirmation, synthesis of proteins, dipeptide, polypeptide, peptide bond, levels of protein structure (primary, secondary, etc.), denaturation

Ch. 8 Metabolism
bioenergetics, metabolism, anabolic, catabolic, energy coupling, 1st & 2nd Laws of Thermodynamics, entropy, H, S, T & G, free energy, exergonic vs. endergonic reactions, ATP, phosphorylation, enzymes, catalyst, regulation of metabolism by enzymes, how enzymes work to speed reactions, confirmation, coenzymes, cofactors, effects of temperature, pH, substrate concentration, inhibitors (2 kinds of inhibitors), saturation, active site, substrate, enzyme equation, characteristics of enzymes, activation energy, feedback inhibition, regulatory enzymes, allosteric site, example of threonine & isoleucine, induced fit
Ch. 6 The Cell
prokaryotic vs. eukaryotic, archae, endosymbiotic theory of eukaryotic cell evolution, principles of cell theory, why are cells so small?, cytoplasm, cytoskeleton (microfilament, microtubule, intermediate filaments), organelle, the characteristics & functions of: centriole, ribosomes, nucleus, nucleolus, chromosomes, endoplasmic reticulum (rough & smooth), golgi body, lysosome, microbody (peroxisome), mitochondria, cristae, matrix, chloroplast, thylakoid, grana, stroma, vacuole, cell wall, plasma membrane, central vacuole, tonoplast, plasmodesmat, phagocytosis, plastid, cilia & flagella, intercellular junctions in animal cells, cellular respiration, photosynthesis, differences between plant and animal cells, endomembrane system, vesicles, autodigestion

Ch. 7 Membrane Structure & Function
fluid-mosaic model of membrane structure (phospholipids, integral vs. peripheral proteins), glycoproteins, membrane functions, osmosis, diffusion, concentration gradient, osmotic pressure, osmoregulation, solution = solute + solvent, osmoregulation, What materials move by osmosis vs. diffusion, selectively permeable, how an osmometer works, osmolality (hyperosmotic, isosmotic, hypoosmotic), animal vs. plant cell (ie. crenation, turgid, etc.), carrier (transport) proteins, facilitated diffusion, active transport, sodium/potassium pump, exocytosis, endocytosis (phagocytosis, pinocytosis, receptor mediated)

Sample Essays
1. Diagram and explain the difference between facilitated diffusion and active transport.
2. Compare and contrast endergonic and exergonic, giving examples of each.
3. List the similarities and differences between plant and animal cells. (Preferably in a table.)
4. What is ocean acidification and how does it relate to Coral Reef Ecosystems?
5. What air-polluting compounds cause acid precipitation? How do these pollutants get into the air? When is the effects of the acid the most pronounced in lakes and streams, Why? What could help to alleviate this problem??????
6. What limits the size of a cell? Discuss SA/V ratios, compartmentalization and how eukaryotes are able to obtain 10-100 times larger sizes than prokaryotes.
7. Describe the properties of water. Include a description of the molecular structure, bonding, specific heat, heat of vaporization, surface tension, cohesion, lower density as a solid, solvent properties and its role in membrane formation.
8. What is a domain? Explain the 3 domains. Why are bacteria and archaea in two different domains? What do the kingdoms in Eukarya have in common and how are they different?
9. What is the scientific method and how does a scientist quantify a difference? Give an example of a scientific study with controlled experiments.
10. Can predation pressure select for size and age at maturity in guppies?

DRAH YDUTS!!!!!