Biology EOC Review

Goal 2: Learner will develop an understanding of the physical, chemical and cellular basis of life.

Analyze the matter-energy relationships of living and non-living things:

1. What are the differences between **living and non-living things**: List the 8 characteristics of life: (Page 16)

Made of Cells	Reproduce	Based upon a universal genetic code	Grow and develop
Obtain and use materials and energy	Respond to their environment	Maintain a stable internal environment	As a group, change over time

2. What are the ways that living things get energy to live? They have a way to break down materials called metabolism.
3. What are some of the ways that living things use energy? Chemosynthesis, Photosynthesis, Cell respiration
4. What are some ways that cells maintain **homeostasis**? Sweating, Panting, Shivering, Cell Membrane
5. How do biological materials respond to **acids and bases**? (Pages 42-43) What is a **buffer**? In Acids, H+ ions are made and in Bases OH- ions are made. A buffer is a solution that prevents sharp changes in pH (about 7).

The chemistry of living things. (Pages 45-47)

6. What element makes all things "organic?" CARBON

(Question 7) 2.01 Compare and contrast the structure and functions of the following organic molecules:

Macromolecules	Function	Subunits
Carbohydrates	Short Term Energy	Glucose
Proteins	Makes up living tissues & organs, also used as enzymes.	Amino Acids
Lipids	Long Term Energy Storage, Protection, Insulation	Glycerol, 3 fatty acid chains
Nucleic Acids	Store Genetic Information	5-carbon sugar, Nitrogen base, Phosphate group.

Specific Molecule	Function	Subunits
Starch	A macromolecule of sugar used for short term or quick energy.	Glucose
Cellulose	A macromolecule of sugar used to make cell walls in plants.	Glucose
Insulin	A protein used in the breakdown of sugar made by the pancreas. Without it, causes Diabetes.	Amino Acids
Glycogen	Storage of excess sugar in the liver and used when glucose levels in the blood is low. (Secondary storage also called *"Animal Starch."*)	Glucose
Glucose	A molecule used to create Glycogen, sugars needed by the brain for life functions.	Carbon, Oxygen, Hydrogen
Enzymes	Proteins used to lower activation energy to cause chemical reactions to occur.	Amino Acids
Hemoglobin	The protein used to bind to Oxygen to carry it in the red blood cells.	Amino Acids
Fats	Long term energy storage, protection and insulation	Fatty acid & 3 glycerol chains
DNA	Genetic code of Life used in replication & transcription.	T, A, G, C
RNA	Genetic code of Life used in transcription & translation.	U, A, G, C