Learning Aid (Bio 107)

Energy Transformation, Cellular Energy & Enzymes

1) Explain in your own words or use a diagram to explain how energy flow and matter is recycled in ecosystems. Include all forms of energy and all kinds of matter, inorganic and the organic.

2) Covalent bonds of biological molecules are forms of ______ (kinetic/potential) energy.

3) _____________ is the field of study of energy transformation.

4) _____________ is the sum of all chemical reactions that take place inside the cell transforming the energy of molecules and their nature.

5) _____________ reactions absorb energy and form products rich in potential energy, and _____________ release energy forming products that contain less potential energy than their reactants.

A. Draw a graph to represent the potential energy of reactants and products of an endergonic reaction.

B. Draw a graph to represent the potential energy of reactants and products of an exergonic reaction.
6) ATP hydrolysis is an _________________ (endergonic /exergonic) reaction

7) Endergonic reactions inside the cell take place when _______ed with ATP hydrolysis that releases a ____________ group. This group is covalently linked to the reactant raising the potential energy of its phosphorylated form.

8) List and explain three different types of cellular work that require cellular energy to occur.

9) Explain the biochemical nature enzymes and their role in catalyzing biochemical reactions.

10) The position on the 3D-conformation of an enzyme where its substrate binds is known as the _________________ site.

11) The position on the 3D-shape or conformation of an enzyme where substance other than its substrate can bind changing the original conformation of the enzyme is known as the _________________ site.

12) List and explain the factors that influence the activity of enzymes.