

# Cellular Energy Study Guide

## A. Energy Overview

1. Definition of energy
2. What is the primary source of energy for living organisms?
3. Define the following terms: heterotroph & autotroph
4. What is the molecule that provides the energy for the cell? (how is that energy released)

## B. Photosynthesis Overview

1. Definition of Photosynthesis
2. What is the chemical formula for the photosynthesis reaction?
3. What are the reactants of photosynthesis?
4. What are the products of photosynthesis (know what particular reactants creates each)
5. What are the two stages of photosynthesis? (know what particular reactions occur in each and where they happen)
6. What things affect the rate of photosynthesis? (know how the rate is affected)

## C. Respiration Overview

1. Definition of Respiration (know reactants, products and where it occurs)
2. What is the chemical formula for the respiration reaction
3. What are the three stages of cellular respiration?
4. What are the reactants of all reactions in cellular respiration? (and the location of each reaction)
5. What are the products of all reactions in respiration (know what particular reactants creates each and location of each reaction)
6. What is the difference between anaerobic respiration and aerobic respiration?
7. How much energy is generated during cellular respiration?
8. Describe the different steps and reactions of photosynthesis and cell respiration? Be sure include how they are related to each other. Use terms such as ETC, ATP, reactants, products, Krebs Cycle, Calvin Cycle, Fermentation, Light Reactions, Glycolysis, electron carriers, water, oxygen, glucose, carbon dioxide, solar energy.

## D. Anaerobic Respiration

1. Define fermentation (identify two types)
2. What are the reactants of fermentation?
3. What are the products of fermentation?
4. Describe in terms of anaerobic respiration what happens when you exercise with the presence of oxygen?
5. Describe in terms of anaerobic respiration how yeast gains energy?

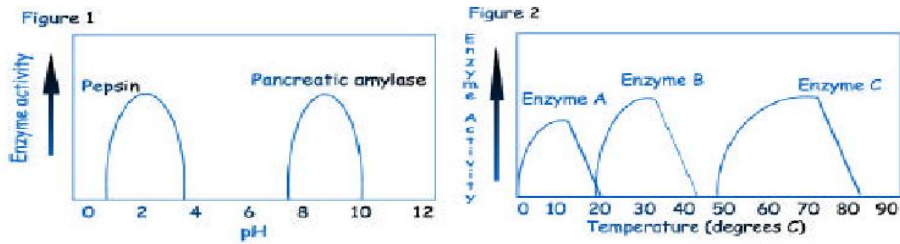
## E. Aerobic Respiration

1. What are the two stages of aerobic respiration?
2. Which process of cellular respiration produces the most ATP?

## F. Enzymes

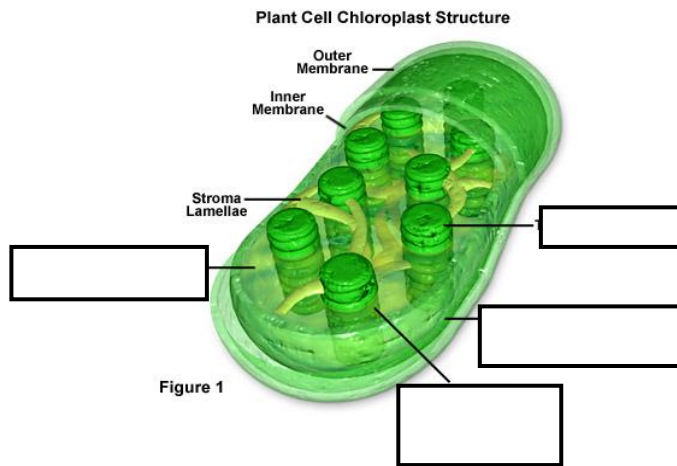
1. How is metabolism affected by enzymes?
2. Explain how enzymes function, their importance to life, and factors that increase or decrease their ability to function. Use terms such as lock and key model, substrate, active site, optimal temperature and pH, activation energy, denature.

3. Be able to read and interpret the following graph (include optimum temp & pH)



G. Chloroplasts

1. Pigments involved in photosynthesis
2. Why do objects appear the color that we see them as?
3. In the diagram below, label each part of the chloroplast and the function that it performs.



H. Mitochondria

1. In the diagram below, label each part of the mitochondria and the function that it performs.

