Biology 160

Unit 3

I. Energy flow

A. Define

B. Laws of thermodynamics

 1. first law

 2. second law

 a. entropy

II. Types of energy

 A. potential

 B. kinetic

C. chemical

1. calorie

2. kilocalorie (Kcal)

III. Energy in biological systems

A. Metabolism

1. anabolic

 a. endergonic

2. catabolic

 a. exergonic

B. Enzyme

1. specificity

 C. Energy carriers

1. ATP

2. ADP

3. NAD

NADH

4. FAD

FADH2

5. NADP

NADPH

D. Oxidation / Reduction

1. oxidation

2. reduction

IV. Photosynthesis
 A. Function

 B. Reactants

C. Products

D. Photosynthesis formula

E. Light dependent pathway

1. Reactants

 2. Products

F. Light independent pathway (Calvin cycle)

1. Reactants

 2. Products

 G. Location

1. Chloroplast

 a. chlorophyll

H. Spectrum

 1. absorb

 2. reflect

Light dependent pathway detail

 I. Electron transport system
 electron transport chain

J. Photolysis of water

K. Chemiosmosis

1. ATP synthase

Light independent pathway (Calvin-Benson cycle)

V. Cellular respiration (aerobic)

 A. Function

 B. formula

C. Reactants

 D. Products

E. Glycolysis

1. Reactants

2. Products

G. Oxidation of pyruvate

1. Reactants

2. Products

H. Krebs cycle (CTA)

1. Reactants

 2. Products

I. Oxidative phosphorylation

1. Reactants

2. Products

 J. Location

 Matrix

 Cristae

 K. Glycolysis detail

 L. Oxidation of Pyruvate detail

 M. Krebs cycle detail

 N. Oxidative phosphorylation detail

 O. Chemiosmosis

 P. ATP totals