SELF-TESTS

In the matching section, there is only one answer to each question; however, the lettered options (a, b, c, etc.) may be used more than once or not at all.

I. Matching

___ 1. Energy-yielding series of reactions.

___ 2. Means "whole enzyme."

___ 3. A nonprotein component of an active enzyme.

___ 4. A measure of the rate of activity of an enzyme.

___ 5. A protein portion of an enzyme, inactive without a cofactor.

___ 6. A group of enzymes that function as electron carriers in respiration and photosynthesis.

___ 7. A mechanism by which fatty acids are degraded.

a. Catabolism
b. Anabolism
c. Turnover number
d. Apoenzyme
e. Coenzyme
f. Holoenzyme
g. Beta oxidation
h. Cytochromes

II. Matching

___ 1. Both the carbon source and energy source are usually the same organic compound.

___ 2. Photosynthetic, but uses organic material rather than carbon dioxide as a carbon source.

___ 3. The photosynthetic purple nonsulfur bacteria would be classified in this nutritional group.

___ 4. Photosynthetic bacteria that use carbon dioxide as a carbon source.

___ 5. Changes the shape of the active site of an enzyme.

___ 6. Very similar in shape or chemistry to the normal enzyme substrate.

a. Competitive inhibitor
b. Noncompetitive inhibitor
c. Photoautotroph
d. Chemoautotroph
e. Photoheterotroph
f. Chemoheterotroph

III. Matching

___ 1. Hexose monophosphate shunt.

___ 2. The final electron acceptor is oxygen.

___ 3. Produces important intermediates that act as precursors in the synthesis of nucleic acids and so on.

___ 4. Bacteria use oxygen substitutes such as nitrates.

___ 5. Pyruvic acid accepts electrons and is turned into various end-products, such as lactic acid or ethanol.

___ 6. Glucose to pyruvic acid.

a. Fermentation

b. Glycolysis

c. Pentose phosphate pathway

d. Substrate-level phosphorylation

e. Anaerobic respiration

f. Aerobic respiration

IV. Matching

___ 1. Electrons are removed from an organic compound and are transferred by an electron transport chain to oxygen.

___ 2. An electron is liberated from chlorophyll and passes down an electron transport chain.

a. Oxidative phosphorylation

b. Substrate-level phosphorylation

c. Photophosphorylation

V. Matching

___ 1. A dehydrogenase coenzyme derived from nicotinic acid (niacin).

___ 2. A dehydrogenase coenzyme derived from riboflavin.

___ 3. In chemiosmosis, protons can diffuse across a membrane only through special channels that contain this enzyme.

___ 4. Pyruvic acid loses carbon dioxide to form an acetyl group.

a. NAD^+

b. Decarboxylation

c. Coenzyme A

d. FMN

e. ATP synthase

f. Dehydrogenation

VI. Matching

___ 1. Glycolysis.

___ 2. A photosynthetic organism that does not produce oxygen.

___ 3. Removal of electrons.

___ 4. Uses an inorganic source of energy such as ammonia or elemental sulfur.

a. Embden–Meyerhof

b. Chemoautotrophic

c. Oxidation

d. Reduction

e. Anoxygenic

Fill in the Blanks

1. A chemoheterotroph that lives on dead organic matter is called a _____.
2. When an enzyme's active site is occupied at all times by substrate or product molecules, it is called _____.
3. Cyanide is an example of a general type of inhibitor called _____.
4. Sulfa drugs are an example of a type of inhibitor called _____.
5. In _____ phosphorylation, no oxygen or other inorganic final electron acceptor is required.
6. Cyanobacteria produce _____ gas, just as do higher plants.
7. The amount of ATP yield from aerobic respiration by a prokaryote is _____.
8. The amount of ATP yield from glycolysis is _____.
9. The removal of NH_2 from an amino acid is called _____.
10. The removal of —COOH from an amino acid is called _____.
11. The substance acted upon by an enzyme is called the _____.
12. Coenzyme A is a derivative of the B vitamin _____ acid.
13. A sequence of enzymatically catalyzed chemical reactions in a cell is called a _____ pathway.
14. Glucose is usually broken down to pyruvic acid by _____.
15. In aerobic respiration, pyruvic acid is converted to acetyl _____; this product can then enter the Krebs cycle.
16. DNA and RNA are made up of repeating units called _____.

Critical Thinking

1. Why are catabolic and anabolic reactions referred to as coupled reactions?

2. Explain how competitive and noncompetitive enzyme inhibitors work.

3. How does the ultimate fate of electrons liberated differ in cyclic and noncyclic photophosphorylation?

4. What are the key features of the pentose phosphate pathway?