Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Cellular Respiration and Fermentation

Independent Questions 9-15

9. The molecule that functions as the reducing agent (electron donor) in a redox or oxidation-reduction reaction

A) gains electrons and gains potential energy.

B) loses electrons and loses potential energy.

C) gains electrons and loses potential energy.

D) loses electrons and gains potential energy.

Topic: Concept 9.1

Skill: Knowledge/Comprehension

10. Which of the following statements describes the results of this reaction?

C6H12O6 + 6 O2 → 6 CO2 + 6 H2O + Energy

A) C6H12O6 is oxidized and O2 is reduced.

B) O2 is oxidized and H2O is reduced.

C) CO2 is reduced and O2 is oxidized.

D) C6H12O6 is reduced and CO2 is oxidized.

Topic: Concept 9.1

Skill: Knowledge/Comprehension

11. Starting with one molecule of glucose, the energy-containing products of glycolysis are

A) 2 NAD+, 2 pyruvate, and 2 ATP.

B) 2 NADH, 2 pyruvate, and 2 ATP.

C) 2 FADH2, 2 pyruvate, and 4 ATP.

D) 6 CO2, 2 ATP, and 2 pyruvate.

Topic: Concept 9.2

Skill: Knowledge/Comprehension

12. What fraction of the carbon dioxide exhaled by animals is generated by the reactions of the citric acid cycle, if glucose is the sole energy source?

A) 1/6

B) 1/3

C) 1/2

D) 2/3

Topic: Concept 9.3

Skill: Application/Analysis

13. The primary role of oxygen in cellular respiration is to

A) yield energy in the form of ATP as it is passed down the respiratory chain.

B) act as an acceptor for electrons and hydrogen, forming water.

C) combine with carbon, forming CO2.

D) combine with lactate, forming pyruvate.

Topic: Concept 9.4

Skill: Knowledge/Comprehension

14. It is possible to prepare vesicles from portions of the inner mitochondrial membrane. Which one of the following processes could still be carried on by this isolated inner membrane?

A) the citric acid cycle

B) oxidative phosphorylation

C) glycolysis and fermentation

D) reduction of NAD+

Topic: Concept 9.4

Skill: Synthesis/Evaluation

15. A young animal has never had much energy. He is brought to a veterinarian for help and is sent to the animal hospital for some tests. There they discover his mitochondria can use only fatty acids and amino acids for respiration, and his cells produce more lactate (an anaerobic byproduct) than normal. Of the following, which is the best explanation of his condition?

A) His mitochondria lack the transport protein that moves pyruvate across the outer mitochondrial membrane.

B) His cells cannot move NADH from glycolysis into the mitochondria.

C) His cells contain something that inhibits oxygen use in his mitochondria.

D) His cells lack the enzyme in glycolysis that forms pyruvate.

Topic: Concepts 9.3, 9.6

Skill: Synthesis/Evaluation