**PRACTICE RESPIRATION QUESTIONS FROM OLD AP EXAMS**

1. The primary purpose of cellular respiration in living organisms is to

(A) remove excess carbon dioxide from the cells.

(B) create water by combining oxygen and hydrogen ions.

(C) produce biologically useful energy in the form of ATP.

(D) produce molecules that can be used in the electron transport system.

(E) create larger complex molecules such as carbohydrates, proteins, and lipids

2. The reactions in glycolysis occur

(A) on the membranes inside the mitochondria

(B) in the fluid matrix of the mitochondria

(C) on the exterior mitochondrial membrane

(D) on the cell membrane

(E) in the cytoplasm

3. The products of glycolysis include two pyruvate molecules and

(A) two molecules of oxygen

(B) two net molecules of ATP

(C) one molecule of acetyl-CoA and one hydrogen ion

(D) one molecule of glucose

(E) one molecule of NADH and one molecule of FADH2

4. If oxygen is not present in sufficient quantity, pyruvate molecules are converted into

(A) ethanol or lactic acid

(B) amino acids or fatty acids

(C) carbon dioxide and water

(D) carbon dioxide or oxygen

(E) acetyl-CoA and citric acid

5. Prior to entering the Krebs Cycle, each pyruvate molecule loses electrons, hydrogen ions, and a carbon, forming

an energy-rich molecule of

(A) NAD+

(B) NADH

(C) FADH2

(D) acetyl-CoA

(E) carbon dioxide

6. The NADH and FADH2 that are formed in the Krebs Cycle primarily function to

(A) remove the waste product CO2 from the system

(B) facilitate the production of water by combining hydrogen ions with oxygen

(C) catalyze the production of ATP from ADP

(D) provide the energy to synthesize acetyl-CoA

(E) transfer electrons to the electron transport system

7. The inner folded membrane of the mitochondria serves primarily to

(A) separate the many reactions that occur in the organelle

(B) provide increased surface area for the molecules and reactions of the electron transport system

(C) provide a surface for the reaction that unites acetyl with Coenzyme A

(D) compartmentalize the diffusing waste products from the cellular respiration reactions

8. When human muscles are exercised and oxygen is depleted, the muscles can continue to produce energy by

(A) taking oxygen from other cells and continuing aerobic respiration

(B) breaking down fatty acids

(C) increasing the speed of the reactions in the Krebs Cycle

(D) increasing supplies of glycogen and other carbohydrate-rich compounds

(E) using fermentation reactions to facilitate glycolysis

9. After the Krebs Cycle only a small portion of the energy of glucose has been converted to ATP. At this point

the majority of usable energy is contained in

(A) NADH and FADH2

(B) pyruvate

(C) acetyl-CoA

(D) carbon dioxide

(E) citric acid

10. The terminal electron acceptor in mitochondrial respiration is

(A) hydrogen

(B) NADH

(C) pyruvate

(D) oxygen

(E) carbon dioxide

11. Fermentation reactions contribute to the continued production of ATP in the absence of oxygen by

(A) splitting carbon dioxide and releasing additional oxygen

(B) moving acetyl-CoA molecules to the Krebs Cycle

(C) recycling NADH molecules to NAD+

molecules

(D) producing enzymes that convert ADP to ATP

(E) breaking down ethanol or lactic acid to carbon dioxide and water

12. All of the following statements are true with regard to mitochondria and chloroplasts EXCEPT

(A) Both are likely to have evolved through endosymbiosis

(B) Both consist of a double phospholipid bilayer

(C) Both produce ATP

(D) Both are found in heterotrophs

(E) Both have internal structures that increase surface area

13. All of the following provide evidence of an increased rate of cellular respiration EXCEPT

(A) increase in the concentration of CO2

(B) decrease in the concentration of O2

(C) a low pH in the inner membrane space

(D) increased activity of ATPsynthase

(E) an increase in the concentration of lactic acid

14. Which of the following represents a plausible pathway of electrons through the process of cellular respiration?

(A) Glucose🡪Pyruvate🡪Acetyl-Co🡪FADH2🡪Oxygen

(B) Glucose🡪NADH🡪electron transport chain🡪Acetyl-CoA🡪oxygen

(C) Glucose🡪Pyruvate🡪electron transport chain🡪NADH🡪Acetyl-CoA

(D) Glucose🡪NADH🡪Acetyl-CoA🡪electron transport chain🡪carbon dioxide