1. **Which of the following is the correct equation for aerobic cellular respiration?**
   (B3.2)
   A) $6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$
   B) $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O + ATP$
   C) $C_6H_{12}O_6 \rightarrow$ Lactic acid + ATP
   D) $6O_2 + 6H_2O \rightarrow$ Glucose + Energy

2. **Which organelle is the site of most of the reactions in aerobic respiration?**
   (B3.3)
   A) Nucleus
   B) Cytoplasm
   C) Mitochondrion
   D) Endoplasmic reticulum

3. **Which stage of aerobic respiration produces the most ATP?**
   (B3.2)
   A) Glycolysis
   B) Krebs cycle
   C) Electron transport chain
   D) Fermentation

4. **Which molecule is produced during glycolysis?**
   (B3.2)
   A) Lactic acid
   B) Pyruvate
   C) Oxygen
   D) Acetyl-CoA

5. **What happens when oxygen is not available in cells?**
   (B3.2)
   A) Aerobic respiration speeds up
   B) The cell stops producing ATP
   C) Anaerobic respiration (fermentation) occurs
   D) The mitochondria release glucose

6. **Which of the following is not a product of aerobic respiration?**
   (B3.2)
   A) Carbon dioxide
   B) Oxygen

C) Water
D) ATP

7. **The role of NADH in cellular respiration is to:**
   (B3.1, B3.2)
   A) Break down glucose
   B) Transfer high-energy electrons
   C) Store oxygen
   D) Produce lactic acid

8. **Which process occurs in the cytoplasm of the cell?**
   (B3.2, B3.3)
   A) Krebs cycle
   B) Electron transport chain
   C) Glycolysis
   D) Pyruvate oxidation

9. **Fermentation in muscle cells produces:**
   (B3.2)
   A) Ethanol
   B) Lactic acid
   C) Pyruvate
   D) Carbon dioxide

10. **What is the main function of ATP in cells?**
    (B3.1)
    A) Transport oxygen
    B) Store genetic information
    C) Provide energy for cellular processes
    D) Break down fats and oils

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11. **Define cellular respiration and identify its main purpose in cells.**
    (B2.1, B3.2)

12. **Explain why mitochondria are often called the "powerhouses" of the cell.**
    (B3.3)

13. **List the three main stages of aerobic respiration and describe where each occurs in the cell.**
    (B3.2, B3.3)

14. **Differentiate between aerobic and anaerobic respiration, providing one example of each.**
    (B3.2)

15. **How does the structure of ATP relate to its function in the cell?**
    (B3.1)

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16. **You are investigating how different sugar sources affect the rate of cellular respiration in yeast. Design a simple experiment to test this. Include a hypothesis.**
    (B2.2, B2.1)

17. **A person is sprinting and runs out of breath. Explain how their cells continue producing energy without oxygen, and the byproduct that builds up.**
    (B3.2)

18. **Compare the ATP yield from one glucose molecule in aerobic versus anaerobic respiration. Why is one more efficient?**
    (B3.2, B3.1)

19. **During intense exercise, lactic acid builds up in muscles. What impact does this have on performance and recovery? Suggest a biological explanation.**
    (B3.2, B3.3)