

CHAPTER 7.2—7.5: Respiration Reactions

1. List two classes of prokaryotes that utilize anaerobic respiration and explain what molecules they use as electron acceptors (instead of oxygen).

a. _____

b. _____

2. STAGE 1: Glycolysis

a. occurs where? _____

b. starts with? _____

c. produces? _____

d. yields how much ATP? _____

e. produces ATP through what process? _____

3. Why is glycolysis thought to be one of the earliest of all biochemical processes that evolved?

4. STAGE 2: Oxidation of Pyruvate

a. occurs where? _____

b. starts with? _____

c. produces? _____

d. yields how much ATP? _____

5. STAGE 3: The Citric Acid (Krebs) Cycle

a. occurs where? _____

b. starts with? _____

c. produces? _____

d. yields how much ATP? _____

e. produces ATP through what process? _____

6. What is the major function of the Krebs' cycle?

7. STAGE 4: The Electron Transport Chain

a. occurs where? _____

b. starts with? _____

c. produces? _____

d. yields how much ATP? _____

e. produces ATP through what process? _____

8. What is the final electron acceptor in the Electron Transport Chain?

9. Describe the role of the Electron Transport Chain. What happens to the electrons and H⁺?

10. What is chemiosmosis and how is it generated?

11. Explain how ATP synthase produces ATP.

12. Explain why respiration is considered exergonic.

Name: _____

Note Set 17

13. Briefly distinguish between the two methods of producing ATP in respiration:

a. substrate-level phosphorylation _____

b. oxidative phosphorylation _____

14. What is the main reason energy is harvested in stages in respiration

15. What is the theoretical ATP yield of aerobic respiration? ...the actual yield? Explain why they differ.

16. Write the summary equation for cellular respiration:

a. Where did the glucose come from? Where did it go? _____

b. Where did the O₂ come from? Where did it go? _____

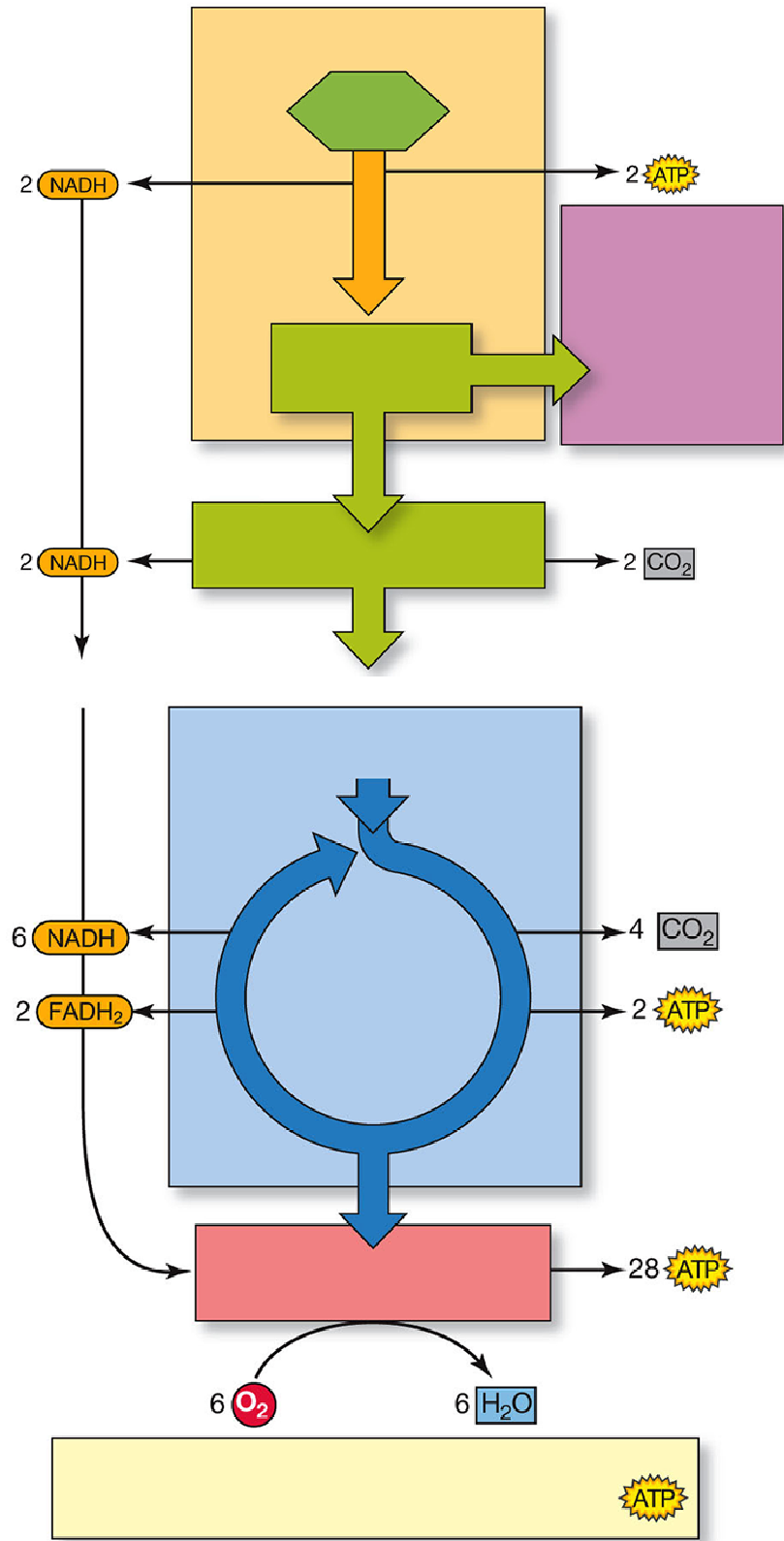
c. Where did the CO₂ come from? Where did it go? _____

d. Where did the H₂O come from? _____

e. Where did the ATP come from? _____

f. What else is produced that is not listed in this equation? _____

17. Using **Figure 7.15** from your text, label the diagram.



18. Fermentation

a. Alcoholic fermentation converts glucose to _____

b. Alcoholic fermentation is utilized by what organisms? _____

c. Lactic acid fermentation converts glucose to _____

d. Lactic acid fermentation is utilized by what organisms? _____

19. Big Picture Thought Questions

a. Why do we eat? _____

b. Why do we breathe? _____

20. What was the evolutionary advantage of the proto-eukaryotes that engulfed aerobic bacteria but did not digest them?