Cell Respiration and Metabolism

Chapter 5

1. Define the following: Metabolism, catabolism, anabolism.
2. What is cellular respiration?
3. What is aerobic respiration (aerobic metabolism), and anerobic respiration (anerobic metabolism)?
4. What are the three general steps in aerobic respiration, where does each step occur within the cell?
5. What are the two general steps in anaerobic respiration, where does each step occur within the cell?
6. Define each of the following, give examples of each:
   A. Glycolysis
   B. Glycogenesis
   C. Glycogenolysis
   D. Gluconeogenesis
   E. Lipogenesis
   F. Lipolysis
   G. Ketogenesis
7. What is the function of Glycolysis? What are the reactants what are the products of glycolysis?
8. How many ATPs are used and how many ATPs are made during glycolysis?
9. What is the function of NAD during glycolysis?
10. What happens to pyruvate (pyruvic acid) after glycolysis in the absence of oxygen?
11. Why must the cell go through the lactic acid pathway in the absence of oxygen?
12. How many ATP are made in the absence of oxygen (Net vs Total)?
13. Describe the Cori Cycle, what is its purpose?
14. What happens to pyruvate after glycolysis in the presence of oxygen?
15. What is Acetyl coenzyme A (Acetyl CoA)? How many are made per glucose molecule?
16. What is the function of the Krebs cycle?
17. What are the major products of the Krebs cycle created (as discussed in class).
18. How is ATP made in the Krebs cycle?
19. What is the electron transport chain? Where in the cell does it take place?
20. Describe how NADH and $FADH_2$ are used to make ATP, why does NADH produce more ATP than $FADH_2$.
21. What is the importance of creating a concentration gradient of H^+ within the outer chamber of the mitochondria?
22. Describe the chemiosmotic theory (electrochemical gradient)?
23. What is the function of oxygen within the electron transport chain?
24. Define the following and where does each take place
    A. substrate-level phosphorylation
    B. oxidative phosphorylation.
25. What is Beta-Oxidation of fatty acids?
26. How many ATP are made for each 16 carbon fatty acid?
27. Describe the following:
    A. Transamination
    B. Oxidative deamination
28. What are the three sources of making ATP, and which one does the body prefer?