AP Biology
Blue Sheet Chapter 9
Cellular Respiration

1. Explain in general terms how cells obtain and harness energy.

2. How can it be said that cells are capable of "recycling" their cellular energy?

3. Explain what redox reactions are and how the "burning" of glucose is a redox reaction. Include and explanation of why this results in the release of energy.

4. Write a balanced equation for the combustion of glucose. Indicate the oxidation states of each atom, and label what is oxidized and reduced.

5. What is the function of NAD^+ in respiration? How does it accomplish its role?

6. Summarize the overall process of glycolysis. Include the location, energy yield, and any important reactions that take place.

7. Explain what takes place in the Kreb's Cycle to prepare a living cell's chemical energy for the electron transport chain.

8. Explain how ETC's deliver the maximum amount of energy stored in NADH and $FADH_2$ to the final electron acceptor (and what is that final acceptor)? How is electronegativity involved with the ETC? Where are the electron transport chains located in the mitochondria?

9. How is ATP produced in the process of chemiosmosis? How is the movement of electrons down the ETC involved? How does the movement of hydrogen also allow the generation of ATP?

10. Summarize the overall energy requirements/yields for each of the steps of cellular respiration.

11. Explain what happens in human muscle cells when an athlete does not have an adequate supply of oxygen to his/her cells.

12. Distinguish between the two major types of fermentation.

13. Compare aerobic and anaerobic respiration.

14. What ability to yeast and certain bacteria possess in terms of harnessing energy?

15. In addition to providing the electrons necessary for generating ATP, what are food molecules used for in living cells?

16. How do living cells regulate the processes involved in cellular respiration?