AP: CHAPTER 9A: RESPIRATION — GLYCOLYSIS

1. Identify some specific processes the cell does with ATP. ______________________________

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2. Explain why ATP is such a “high energy” molecule. ______________________________

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3. Sketch the ATP cycle:

   [Sketch of ATP cycle]

4. How does ATP “couple reactions”? ______________________________

   ______________________________________

   ______________________________________

5. What is the name of enzymes which phosphorylate molecules? ______________________________

6. Define each of the following:

   a. Oxidation ______________________________

      ______________________________________

   b. Reduction ______________________________

      ______________________________________
7. What is the role of NAD+ & FAD<sup>2</sup> in respiration? __________________________________

8. Explain why respiration is considered exergonic. __________________________________

9. Glycolysis starts with __________________ and produces __________________

10. The Kreb’s cycle takes place in the: __________________________________

11. Pyruvate is converted to ______________________ before the Krebs cycle.

12. The Electron Transport Chain is located in the: __________________________________

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

14. What is chemiosmosis and how is it generated?

15. How does the mitochondrion generate ATP?
16. Label the diagram.
   Include: CO2, organic compounds, O2, H2O, respiration, photosynthesis, light, heat, ATP

17. What happens to most of the energy released during cell respiration? ________________

18. Alcoholic fermentation converts glucose to __________________________

19. Alcoholic fermentation is utilized by what organisms? _________________________

20. Lactic acid fermentation converts glucose to __________________________

21. Lactic acid fermentation is utilized by what organisms? _________________________

22. Identify examples of each of the following feedback mechanisms

   a. Negative feedback __________________________

      __________________________

   b. Positive feedback __________________________

      __________________________
23. Write the summary equation for cellular respiration:

__________________________________________________________

a. Where did the glucose come from? ____________________________

b. Where did the O₂ come from? ________________________________

c. Where did the CO₂ come from? ______________________________

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? ______

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

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25. Why do we eat? _____________________________________________

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26. Why do we breathe? _________________________________________

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