CHE 102 - Homework - Ch 33a

p. 919-928 **Bioenergetics - Basics** Score: _____/45

Name: _____ Date: _____

[6 pt] 1. Define Oxidation and Reduction. List 3 ways to differentiate between the two.

[4 pt] 2. Which molecule delivers more energy in a biological reaction, methanol or methanal? Draw each molecule, and calculate the oxidation number for the carbon atom. Explain your answer.

[4 pt] 3. Which contains more biological/metabolic energy, 1 mole of glucose or 1 mole of hexanoic acid? Explain.

[4 pt] 4. Define Catabolism. List 3 ways that one can recognize a catabolic reaction.

[4 pt] 5. Define the term: Redox coenzymes. List the 3 most common ones.

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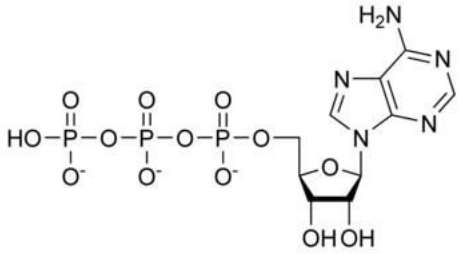
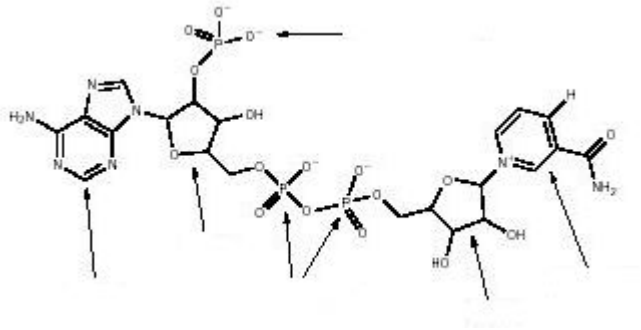
[4 pt] 6. Explain why high energy phosphate bonds are a good means of storing energy. Circle the high energy phosphate bond(s) in the following picture.



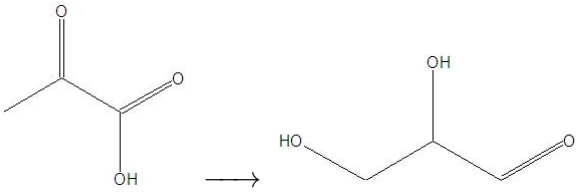
[7 pt] 7. Identify the following molecule. Label each of the parts pointed to by an arrow.



[4 pt] 8. Given the following reaction: $2FADH_2 + O_2 \longrightarrow 2FAD^+ + 2H_2O$, is $FADH_2$ oxidized or reduced in the reaction? Explain.

[4 pt] 9. What is wrong with the following reaction: $NAD^+ + FAD + 3H^+ \longrightarrow NADH + FADH_2$? Explain.

[4 pt] 10. A new biological process has been discovered!



(a) The pathway uses NADH as a coenzyme. Is NADH a reactant or a product? Explain.

(b) Would you expect ATP to be a reactant or a product? Explain.