WLHS / AP Bio / Monson

Name_____
Date_____Per_____

Chapter 9 Study ?'s (part 1): Harvesting Chemical Energy (9.1 – p. 163-168)

1) In comparing cellular respiration to the burning of gasoline, what chemical compounds represent the "fuel" and the "exhaust"?

Fuel: Exhaust:

2a) Draw and label a diagram showing **phosphorylation**. (see chapter 8)

2b) How does this process result in a change of energy? (see chapter 8)

3a) Why do oxidation and reduction always occur together?

3b) In the metabolism of glucose (cellular respiration), which reactant is:

- oxidized (a.k.a. the "reducing agent"):_____
- reduced (a.k.a. the "oxidizing agent"):_____

4a) How does the coenzyme NAD^+ "trap" electrons from glucose and other fuel molecules?

4b) Is NAD^+ an oxidizing agent or a reducing agent? Explain why.

5a) What is the electron transport chain (e.t.c.)? What is its purpose in cellular respiration?

5b) **Where** is the e.t.c.? (also known as the “respiratory chain”)

5c) What “catches” the electrons at the bottom of the chain? Why is this a suitable “electron acceptor” for the end of the chain?

6) List the 3 metabolic stages of respiration. For each stage, state the location in the cell where it occurs, and the overall purpose of that stage.

7a) Compare **oxidative phosphorylation** to **substrate-level phosphorylation.**

7b) Which method of ATP synthesis (from 7a) produces more ATP molecules in the cell?