

Name _____ Date _____ Period _____

HONORS BIOLOGY – PROBLEM SET

CHAPTER 6: HOW CELLS HARVEST CHEMICAL ENERGY

1. Complete the following table. Be specific in your explanations. [3 points]

	CHEMICAL	SOURCE	EXPLANATION
a.	water molecules		
b.	carbon dioxide		
c.	ATP		

2. What is the result if... [4 points]
- the cell is anaerobic?
 - a person is poisoned by cyanide?
 - a person has emphysema and has difficulty breathing?
 - all of the inner folds of the mitochondrion suddenly disappeared?
3. A yeast cell typically consumes 0.15 grams of glucose during a certain time period in an aerobic environment. The cell is moved to an anaerobic environment. If the cell continues to generate ATP at the same rate, how many grams of glucose will it consume during the same time period in the anaerobic environment? Explain your answer. HINT: Think about how many ATP are made when oxygen is available. Then think about how many ATP are made when oxygen is not available. Make a ratio and then cross multiply with the 0.15 grams. [1 point]
4. When you exercise, you might notice that your muscles begin to burn. Name at least 4 things that this has in common with the way that beer and wine are produced. [2 points]

Name _____ Date _____ Period _____

HONORS BIOLOGY – PROBLEM SET

CHAPTER 7: PHOTOSYNTHESIS – USING LIGHT TO MAKE FOOD

1. Complete the following table. Be specific in your explanations. [3 points]

	CHEMICAL	SOURCE	EXPLANATION
a.	oxygen gas		
b.	carbon atoms in glucose		
c.	ATP		

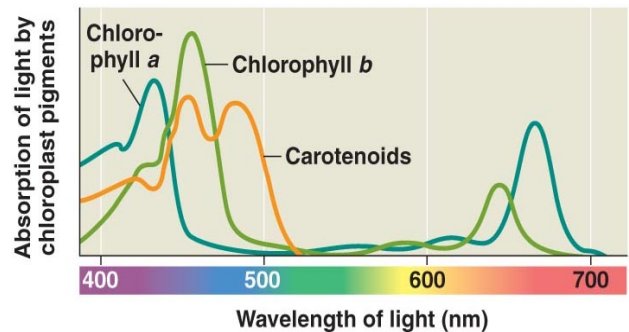
2. How will the dark reactions be affected if... [2 points]

- a mysterious disease caused all of the stomata to remain closed?
- a genetic defect caused NADPH to stop receiving hydrogens?

3. Do you remember your 13 levels of organization? Think of at least one example for each of these levels that SPECIFICALLY RELATES TO PHOTOSYNTHEISIS: levels 2, 3, 4, 5, 6, 7, 8, 9, 10. [2 points]

4. Answer these questions by looking at the graphs for absorption spectra and action spectrum: [3 points]

- At what wavelengths does chlorophyll b absorb the most light?
- At what wavelengths does chlorophyll a absorb the most light?
- At what wavelengths do the carotenoids absorb the most light?
- What color are most plants (particularly their chloroplasts)?
- At what wavelengths do the above pigments reflect the most light?
- What colors of light are most useful to photosynthesis?
- What colors of light are least useful to photosynthesis?
- Hypothesize an explanation for why leaves change color in the fall.



purple blue green yellow orange red

