Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_

**Quiz Study Guide – Unit 4 (Photosynthesis and Cell Respiration)**

**Vocabulary:** Provide the definitions of the following vocabulary terms

|  |  |
| --- | --- |
| 1. Autotroph |  |
| 1. Heterotroph |  |
| 1. Photosynthesis |  |
| 1. Cellular Respiration |  |
| 1. Anaerobic Respiration |  |
| 1. Chlorophyll |  |
| 1. Glucose |  |
| 1. ATP |  |
| 1. Metabolism |  |
| 1. Photosystem |  |
| 1. Electron Transport Chain |  |
| 1. ATP Synthase |  |
| 1. Electron Carrier |  |
| 1. Mitochondria |  |
| 1. Chloroplast |  |

**Diagram (Chloroplast):** Draw a chloroplast in the space below and label the following parts… outer membrane, inner membrane, thylakoid, granum, stroma

**Diagram (Mitochondrion):** Draw a mitochondrion in the space below and label the following parts…outer membrane, inner membrane, cristae, matrix, inner membrane space

**Equations:** Provide the equations for photosynthesis and respiration in words and chemical formulas and answer the question below.

***Photosynthesis***

|  |  |
| --- | --- |
| Words |  |
| Chemical Formulas |  |

***Cellular Respiration***

|  |  |
| --- | --- |
| Words |  |
| Chemical Formulas |  |

How do the processes of photosynthesis and respiration relate to each other and to metabolism in general? Why are they often thought of as a cycle?

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**Tables:** Provide information about the 2 major steps of photosynthesis and the 3 major steps of cell respiration in the space below.

***Photosynthesis***

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Location in Organelle | Reactants | Products |
|  |  |  |  |
|  |  |  |  |

***Respiration***

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Location in Organelle | Reactants | Products |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

**Questions:** Answer the questions thoroughly and accurately. You do not need to use complete sentences, but you may need to use the back of the page or staple a separate piece of paper to this packet.

1. Why is ATP used as the energy storage molecule? Show the process of ATP being broken down to release energy.
2. What is the ultimate goal of photosynthesis?
3. What is the ultimate goal of cellular respiration?
4. Why do scientists believe that photosynthesizing bacteria were some of the first organisms on earth?
5. Why are green plants unable to live at great depths in the ocean?
6. How are excited electrons (carried by NADP+) and ATP from the light reactions used in the dark reactions?
7. During which stage of cellular respiration is the most ATP created?
8. What is the ultimate source of energy for all life processes?
9. Chlorophyll is a green pigment used to capture radiant (light) energy. Does that mean it absorbs green light?
10. Why do rainforest plants tend to have very large leaves?