

**Photosynthesis Quiz #2**

**25 pts**

**KEY**

1. Dark Reaction

a. What is another name for the dark reaction?

*1 pt Calvin Cycle*

b. Does it need to be dark for the dark reaction to occur? Explain.

*2 pts No. It simply does not require light to occur. It would be more proper to call it the light independent reaction.*

2. In **Phase 1** (Carbon Fixation Phase) of the dark reaction a carbon dioxide molecule is attached to ribulose biphosphate (RuBP).

a. How many carbons does RuBP have?

*1 pt 5 carbons*

b. What immediately happens to this newly formed molecule?

*1 pt It is immediately broken in half (from a 6 carbon molecule into 2 3 carbon molecules)*

c. What is the name of the enzyme that catalyzes this reaction?

*1 pt Rubisco*

d. What is the claim to fame of this enzyme?

*1 pt It is the most abundant protein on earth.*

3. What is the main purpose of **Phase 2** (Reduction Phase) of the dark reaction?

*1 pt To create an energy rich molecule.*

4. At the end of Phase 2 a molecule leaves the cycle.

a. How many carbons does this molecule have?

*1 pt 3 carbons*

b. What is the name of this molecule?

*1 pt Glyceraldehyde 3 phosphate*

c. What eventually happens to this molecule?

**1 pt**                    ***2 of them are combined together to form glucose.***

5. What happens during phase 3 of the dark reaction?

**1 pt**                    ***Ribulose biphosphate (5 carbon molecule) is regenerated***

6. What two molecules drive the dark reaction? How many of each are required to make 1 molecule of glucose?

**2 pts**                    ***18 ATP and 12 NADPH***

7. Identify the items below (a-h).

**8 pts**

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8. Where have you seen a system that is similar to this? What was the process called? What is the name of the mechanism (here and in the other system)?

**3 pts**                    ***In the mitochondria  
Oxidative Phosphorylation  
Chemiosmosis***