Name _____

PHOTOSYNTHESIS ANIMATION

Directions—View the animation at the following url: http://highered.mcgraw-hill.com/sites/0072437316/student_view0/chapter10/animations.html#--section the animation entitled—**Photosynthetic Electron Transport and ATP Synthesis** and address the following questions.

1. Diagram and label the relationship between thylakoid membranes and stroma within a choloroplast.

2. Describe what happens when photon of light strikes the chlorophyll molecule in photosystem II.

3. Describe what happens when an enzyme splits a water molecule (what happens to the hydrogen atoms, oxygen atoms and electrons)—why is the action of the electrons critical to the action at the chlorophyll?

4. ***Plastoquinone and B6f complex are specific types of molecules in the electron transport chain—you are not responsible for remembering the specific names of these molecules, only that they represent the specific parts of the electron transport chain***—What happens to hydrogen ions when electrons move down the electon transport chain of photosystem II?

5. Are the charged H+ ions freely permeable to the thylakoid membrane? Where is the only location they move down their gradient, out of the thylakoid space and into the stroma?

6. Is the formation of ATP from ADP energy requiring or energy releasing (this is not mentioned in the animation—we did cover this in class).

7. Notice that the facilitated diffusion of H+ ions down their gradient through ATP synthetase transport proteins—is this diffusion (movement) energy releasing or energy requiring (again, not mentioned in the animation—we covered this previously).

8. Link these two items by writing a sentence that relates the action of the diffusion of hydrogen ions to the formation of ATP.

9. ***Photosystem I is another electron transport chain—again you are not responsible for remembering the specific names of the molecules ferrodoxin and NADP reductase***—What is the final destination (final electron acceptor) of electrons after chlorophyll of Photosystem II absorbs a photon of light?

10. Finally, three important molecules are produced in the light dependent reactions, write a sentence that briefly states how oxygen, ATP and NADPH are formed in these reactions.