**Photosynthesis**

The Equation for photosynthesis:

Two phases of photosynthesis: 1) 2)

**Light Dependent Reactions**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ capture light

Two Parts: 1)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - saclike membranes arranged in grana

2)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - fluid filled space outside the grana

Chloroplasts contain \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ which are light absorbing molecules

Ex) Chlorophyll \_\_\_\_\_and Chlorophyll \_\_\_\_\_, β – carotene which is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ like those found in carrots

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ process where efficient energy transfer occurs in the thylakoid membrane.

Steps of electron transport:  
1) Light excites the protein \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, causes a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ molecule to split in a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ called a proton and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to be released as waste product

2) Excited electrons move from photosystem II protein to an acceptor on the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3) The electron acceptor moves the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to photosystem \_\_\_\_\_\_\_

4) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ transfers electrons to the protein\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ transfers the electrons to NADP+ forming the molecule \_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the production of ATP in conjunction with electron transport.

The \_\_\_\_\_\_\_\_\_ from the breakdown of Water drives this process.

It is dependent on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ gradient.

Channels in membrane of thylakoid contain \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ which allows ATP to be formed in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Light Independent Reactions (AKA the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)**

Energy is stored in organic molecules like glucose

Steps of the Calvin Cycle:

1. **Carbon Fixation**: Six \_\_\_\_\_\_\_\_ molecules combine with six \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ compounds to form twelve \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ molecules called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (3 – PGA)
2. \_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_ is transferred to 3-PGA to form \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (G3P)
3. Two \_\_\_\_\_\_\_\_\_\_\_\_\_ molecules are removed for production of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and other stuff.
4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (enzyme) converts the G3P molecules in to 5 carbon molecules called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (RuBP)