



THE “LIGHT” PHASE



- This occurs in the Granum, using **sunlight**.
- The chlorophyll takes in the sun's energy *.
- Some energy (*) splits H_2O into $H^* + H^* + O$. This process is called PhotoLysis.
- O_2 is released into the atmosphere.
- The energised Hydrogen (H^*) is taken into the Stroma by its **carrier**, called ATP (Adenosine Tri-Phosphate).



THE “DARK” PHASE

It CAN occur in the daylight.



- This occurs in the Stroma.
- The chlorophyll already has energy, so does **not** need sunlight at this stage.
- CO_2 is split into $\text{C} + \text{O} + \text{O}$, and is all combined with the H^* to produce energy-rich glucose: $\text{C}_6\text{H}_{12}^*\text{O}_6$.

The Carrier: ATP^* carrier releases the energy (*) by losing a P. (It breaks down into $\text{ADP} + \text{P} + ^*$.)



HOW MUCH FOOD?



- The more CO₂ we have, the more food we can make – up to a point! If there is too much CO₂, it reacts with H₂O to make Carbonic Acid. This DeNatures the PhotoSynthesis enzymes. (**Bad!**)
- The more sunlight energy we have, the more we can capture. But the leaf can only make a certain amount of food, so this graph evens out. (**Peaks.**)
- There is an optimum temperature. If it gets too hot, PhotoSynthesis Enzymes DeNature. (**Bad!**)

GLASS-HOUSES



- Glass-Houses are houses made of glass, in which plants are grown.
- It gives Protection from all external factors like birds, pests, animals, wind, hail, diseases, etc.
- It can control: amounts of water and nutrients, as well as amounts of **carbon dioxide, light, temperature**.
- So we can get optimum conditions to help grow lovely **green** plants. And that is why these **GlassHouses** are also called **GreenHouses**.



*Link with **GreenHouse Effect**.*

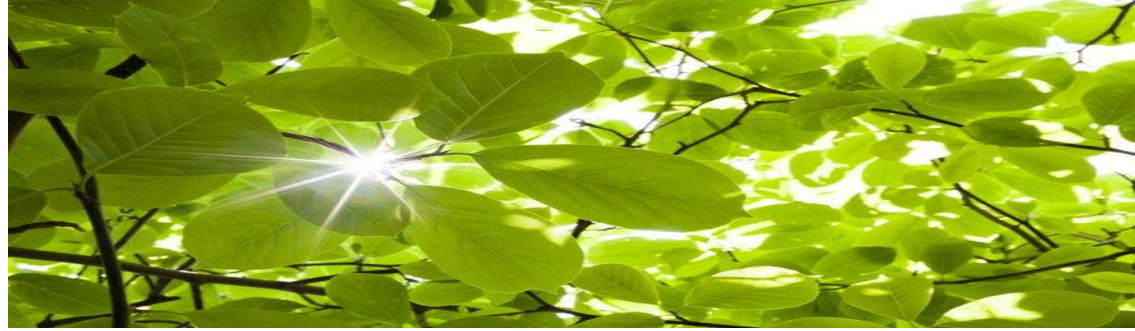
PhotoSynthesis: Makes food. Releases O₂. Absorbs CO₂.

QUESTIONS Page 33

Question 1

5 X [1] = [5]

1. Glucose
2. Oxygen
3. Iodine
4. Variegated
5. Chloroplasts



Question 2 [6]

PhotoSynthesis. Radiant energy. Chloroplasts. Carbon dioxide. Water. Leaf. Oxygen.

Question 3 Chloroplast [1]

Labels: Double membrane. Stroma. Thylakoid. Stack of Granum. Stored starch. Inter-Granum. 6 X [1]

6. Any CO_2 that the plant cannot use is extra. This now reacts with H_2O to produce carbonic acid, which is bad for the enzymes. [4]

7. A glass building, built specially to grow plants in a controlled environment. [2]

8. Sunlight energy comes in. Birds, pests and animals cannot get in. Amounts of water can be controlled, as can amounts of nutrients, CO_2 levels, amounts of light, and temperature. [6]

9. Food can be made, with energy for all living things. It keeps a balance in the atmosphere: CO_2 out, O_2 in. [4]