PHOTOSYNTHESIS IN HIGHER PLANTS

WHAT IS LIGHT REACTION

Light reaction:

Light reaction occurs in grana of chloroplast.

WHAT IS LIGHT REACTION?

- Light reactions or the 'Photochemical' phase include
  (a) Light absorption (b) Water splitting (c) Oxygen release (d) The formation of high-energy chemical intermediates, ATP and NADPH.
- Several protein complexes are involved in the process. The pigments are organised into two discrete photochemical light harvesting complexes (LHC) within the Photosystem I (PS I) and Photosystem II (PS II). These are named in the sequence of their discovery, and not in the sequence in which they function during the light reaction.
- The LHC are made up of hundreds of pigment molecules bound to proteins. Each photosystem has all the pigments (except one molecule of chlorophyll a) forming a light harvesting system also called antennae. These pigments help to make photosynthesis more efficient by absorbing different wavelengths of light.
- The single chlorophyll a molecule forms the reaction centre. The reaction centre is different in both the photosystems. In PS I the reaction centre chlorophyll a has an absorption peak at 700 nm, hence is called P700, while in PS II it has absorption maxima at 680 nm, and is called P680.

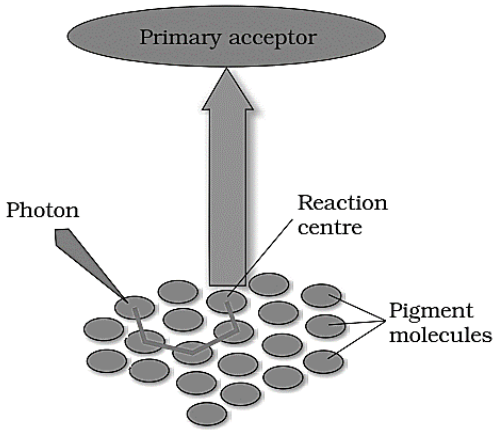

Fig. The light harvesting complex (Text Book)

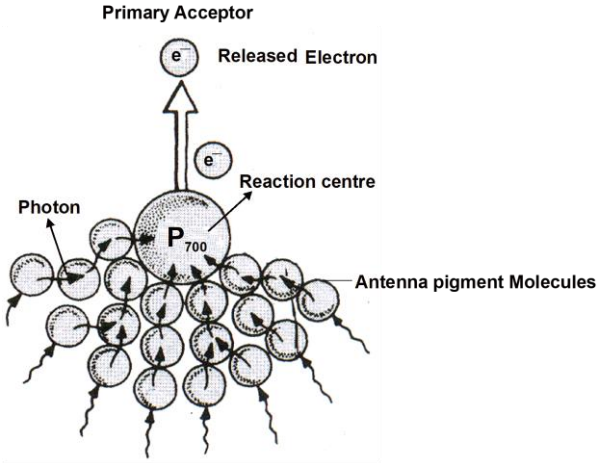

Fig. Transfer of absorbed light energy from Antenna molecules to the core molecules by resonance.

Differences between PS-I & PS- II

S. No.	PS-I	PS-II
1	It is located on the non-appressed part of grana and stroma thylakoids	It is located in the appressed part of grana thylakoids
2	P-700 is a reaction centre in PS-I	P-680 is reaction centre in PS-II
3	It is involved in both cyclic and non-cyclic photophosphorylation.	It is involved only in non–cyclic photophos-phorylation.
4	During non-cyclic photophosphorylation. It obtains electron from PS-II	It obtains electron through photolysis of water
5	Molecular oxygen is not evolved in this system.	Molecular oxygen is evolved due to photolysis of water.