UNIT 3: life on earth

 Key area 3: Photosynthesis

1. **State the definition of PHOTOSYNTHESIS:**

PHOTOSYNTHESIS is a series of enzyme controlled reactions by which GREEN PLANTS convert sunlight (LIGHT ENERGY) into food (CHEMICAL ENERGY).

1. State that photosynthesis is a two stage process.
2. Explain that the raw materials CARBON DIOXIDE and WATER are converted into end products SUGAR and OXYGEN by a series of enzyme controlled reactions.
3. State the word summary of the process of photosynthesis.

**STAGE 1 : LIGHT REACTIONS**

1. State that the first stage of PHOTOSYNTHESIS is the LIGHT REACTION.
2. Explain that during the first stage of photosynthesis, LIGHT ENERGY from the SUN is trapped by the green pigment CHLOROPHYLL in the CHLOROPLASTS of GREEN PLANT CELLS.
3. State that during the light reaction, the light energy trapped by chlorophyll is converted into chemical energy which is used to generate ATP from ADP + Pi.
4. State that WATER is split to produce HYDROGEN and OXYGEN.
5. Describe what happens to the oxygen by-product from these reactions.

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**STAGE 2: (CARBON FIXATION)**

1. Explain that during the second stage of photosynthesis, HYDROGEN and ATP produced from the light reactions, is combined with CARBON DIOXIDE to produce SUGAR.
2. State which biological molecules control this process.
3. State that the SUGAR formed during photosynthesis can be used for respiration..
4. State that the sugar can also be converted into other substances and provide examples of those substances.



**Limiting Factors**

1. Understand that the RATE OF PHOTOSYNTHESIS is LIMITED when one of 3 environmental factors are in short supply, including:
	* LIGHT INTENSITY
	* CARBON DIOXIDE CONCENTRATION
	* TEMPERATURE

1. Explain the link between limiting factors and growth of plants.
2. Identify the factor limiting the rate photosynthesis from a graph.

