3.2 PHOTOSYNTHESIS

Definition of Photosynthesis

Photosynthesis is the biological process through which green plants manufacture food using sunlight, water, and carbon dioxide. During this process, oxygen is released into the atmosphere.

Requirements for Photosynthesis

The process requires sunlight, chlorophyll, water, and carbon dioxide. Without these factors, plants cannot produce glucose efficiently.

Role of Chlorophyll

Chlorophyll is the green pigment found inside chloroplasts. It absorbs light energy needed to drive food production in plants.

Raw Materials

Water is absorbed from the soil through roots, while carbon dioxide enters leaves through stomata. These materials combine during food synthesis.

Products of Photosynthesis

The main products formed are glucose and oxygen. Glucose serves as stored chemical energy, whereas oxygen is released into the air.

Importance of Photosynthesis

Photosynthesis supplies food for nearly all living organisms. It also maintains atmospheric oxygen necessary for respiration.

Storage of Food

Plants may convert excess glucose into starch for future use. This stored material can later provide energy during unfavorable conditions.

Factors Affecting Photosynthesis

Light intensity, temperature, water availability, and carbon dioxide concentration influence the rate of photosynthesis.

Photosynthesis Equation

Carbon dioxide + Water → Glucose + Oxygen (in the presence of sunlight and chlorophyll)

Important Concepts

Concept	Explanation
Chlorophyll	Pigment absorbing light energy
Stomata	Small openings allowing gas exchange
Glucose	Food produced during photosynthesis
Oxygen	Gas released by green plants
Chloroplast	Organelle where photosynthesis occurs

Summary

Photosynthesis enables green plants to prepare food using sunlight. The process depends on chlorophyll, water, and carbon dioxide. Glucose produced during photosynthesis supplies energy, while oxygen supports respiration in living organisms.

Questions and Answers

What is photosynthesis?

It is the process by which plants prepare food using sunlight.

Which pigment absorbs sunlight?

Chlorophyll absorbs light energy.

What gas enters leaves during photosynthesis?

Carbon dioxide enters through stomata.

Name one product of photosynthesis.

Glucose or oxygen.

Why is photosynthesis important?

It provides food and oxygen for living organisms.

Study Notes

• Green plants perform photosynthesis.
• Sunlight is the primary energy source for the process.
• Chloroplasts contain chlorophyll pigments.
• Water enters plants through roots.
• Carbon dioxide enters leaves through stomata.
• Glucose stores chemical energy.
• Oxygen produced supports aerobic respiration.
• Photosynthesis helps maintain ecological balance.