

CLASS - X

SUBJECT: BIOLOGY

TOPIC- PHOTOSYNTHESIS

SYNOPSIS:-

- Photosynthesis is the physicochemical process by which plant can convert light energy into chemical energy, in the form of carbohydrate from carbon dioxide & water.
- Raw materials for photosynthesis: carbon dioxide, water, chlorophyll, light energy
- Stomata are the structures which help in exchange of gases.
- Chloroplasts are rich in chlorophyll pigment. Chlorophyll is responsible for trapping the energy from sunlight.
- Photosynthesis involves two types of reactions: Photochemical phase and Biosynthetic phase
- Photochemical phase (Light Reaction)-These are light dependent reactions. Splitting of water molecules releases oxygen as a by product. Grana of chloroplasts are the sites of these reactions. ATP and NADPH₂ are the energy rich compounds synthesised in these reactions.
- Biosynthetic phase (Dark Reaction) - These are light independent reaction. Carbon dioxide is reduced to carbohydrates. Stroma of chloroplasts are the sites of these reactions. Energy rich compounds are utilised in the synthesis of carbohydrates.
- Factors Affecting Photosynthesis: Internal factors- Age of the leaf, Leaf anatomy, chlorophyll content, accumulation of end products. External factors- Light intensity, Carbon dioxide content, water content, Temperature.
- Importance of photosynthesis:
 - a. To produce food for all organisms.
 - b. Release oxygen which is a life supporting gas.
- Carbon cycle-It is a series of chemical reactions in which the carbon dioxide of the air is used by living organisms and finally returned into the air.

WORKSHEET

Qs A. Name the following:-

1. The organelle where sugar is produced.
2. Piles of disc like structure in the chloroplast.
3. The part of the chloroplasts where the light reaction of the photosynthesis takes place
4. Any 2 plants which does not perform photosynthesis.
5. The plastids found in cells of yellow coloured petals
6. The ground matrix present in chloroplasts
7. The colour in which the rate of photosynthesis is minimum
8. The colour or rays in which the photosynthesis is highest next to red
9. The chemical used to test starch
10. Organelles that transform radiant energy into molecule of organic compounds.

Qs 2. Fill in the blanks with the appropriate word/ term:-

Photosynthesis involves light reaction and dark reaction. During light reaction, the chlorophyll present in the _____ gets activated by absorbing light energy. This energy splits _____ molecules to _____ and oxygen and releases two electrons. The process is called _____. The _____ ions are picked up NADP to form _____. The ADP is converted to _____. This process is called _____. During the dark phase, the compound produced at the end of light reaction reacts with carbondioxide to form _____. This product is converted to starch. The process is called _____.

Qs 3. State the location and function of the followings:-

- | | | |
|---------------|---------|---------------|
| 1. Guard Cell | 3.Stoma | 5.Chloroplast |
| 2. Thyllakoid | 4.Grana | |

Qs 4. Distinguish between the followings:-

- a. Photophosphorylation and photolysis
- b. Respiration and photosynthesis

Qs 5. A potted plant was taken to prove a factor necessary for photosynthesis. The potted plant was kept in the dark for 24hrs.One of the leaves covered with black paper and placed in sunlight.

- a. What aspect of photosynthesis was being tested?
- b. Why was the plant placed in the dark before the beginning of the test?
- c. During starch test why was the leaf
 - I. boiled in water
 - II. boiled in methylated spirit
- d. Write the balanced equation for photosynthesis.

Qs 6. Answer the following questions:-

- a. What is light reaction known as?
- b. Name the site of light reaction.
- c. Which reducing agent is formed after photolysis?
- d. How is oxygen produced in light reaction?
- e. Name the end product of the light reaction.
- f. What is dark reaction known as?
- g. Name the site where the dark reaction is carried out.
- h. Why the dark reaction is called light independent reaction?

Complete the Exercises from the text book: Page No:-75-78.

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