



Grade 11

Science

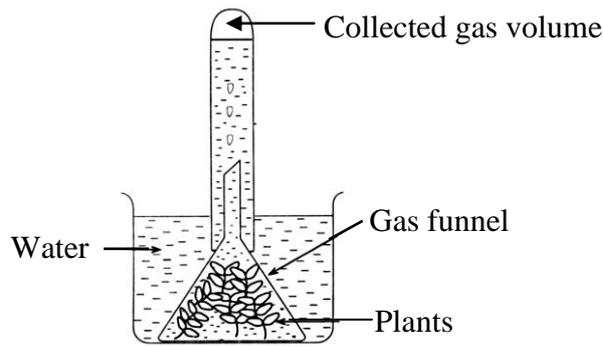
Unit : 02 - Photosynthesis

MCQ Questions

- (1) Which of the following statements is false regarding photosynthesis?
- 1) CO<sub>2</sub> gas is produced as a by-product of photosynthesis.
  - 2) Photosynthesis can be done naturally.
  - 3) Solar energy is essential for photosynthesis.
  - 4) Light energy, water, CO<sub>2</sub> and chlorophyll are required for photosynthesis.
- (2) What is the food type that translocates to storing organs.
- 1) Sucrose
  - 2) Glucose
  - 3) Starch
  - 4) Cellulose
- (3) What is the by product of photosynthesis?
- 1) Carbon dioxide
  - 2) Oxygen
  - 3) Glucose
  - 4) Sucrose
- (4) Into which energy that solar energy is converted to, during photosynthesis?
- 1) Light energy
  - 2) Chemical energy
  - 3) Heat energy
  - 4) Potential energy
- (5) What is the transportation method of energy of soil water into the root hairs.
- 1) Diffusion
  - 2) Osmosis
  - 3) Active absorption
  - 4) mass flow
- (6) When a leaf is tested for starch, plant should be taken after keeping it in dark for 48 hours. The reason for this is that,
- 1) To destroy cells in the leaves.
  - 2) To dissolve chlorophyll in the leaves.
  - 3) To remove stored starch completely from the leaves.
  - 4) To provide extra CO<sub>2</sub> to the leaves.
- (7) Which of the following statements is correct regarding photosynthesis?
- 1) CO<sub>2</sub> diffuses into leaf through veins.
  - 2) Water in the soil is absorbed through root hairs by osmosis.
  - 3) Photosynthesis involves to reduce atmospheric O<sub>2</sub> level.
  - 4) CO<sub>2</sub> and sunlight are the raw materials needed for photosynthesis.



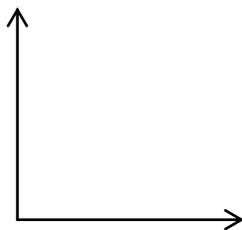
- (2) i) The diagram shown below is a set up used to study the influence of light intensity under different environmental conditions on the rate photosynthesis.



The reading were stated below.

Light intensity	In dark	In a shady place	Low light intensity	High light intensity
Light intensity	0	1	2	3
Volume of gas evolved during 30 min.	0	2	4	6

- ii) Draw a graph using the light intensity for the axis x and the volume of the gas evolved for the axis y.



- iii) Explain the rate of changes of photosynthesis with intensity. According to the data and the graph drawn earlier.

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- iv) Name a plant that can be used to put inside the funnel.

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- v) Name two factors essential for photosynthesis except light.

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- vi) a) The gas evolved here is collected inside the test tube higher the water level.  
 State two factors that affect for it.

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b) What is the gas that collected inside the test tube?

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c) What is the laboratory experiment that you do to identify the above gas?

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d) Write the energy transformation takes place in the process of photosynthesis.

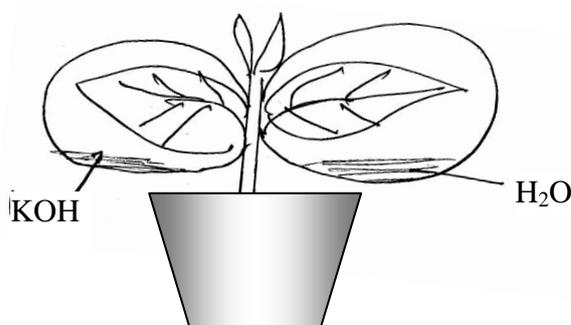
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e) Write the balanced equation for the above reaction.

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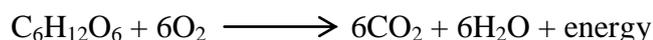
### Essay Questions

(1) A) Plants are very important for the existence of the living world. Following set up indicate main biological process related to plants.



- i) What is the main objective of this experiment?
- ii) Mention one precaution that should be followed before start the above experiment.
- iii) Explain the reason for doing the above step.
- iv) How can you confirm that the above objective of experiment was succeeded?
- v) What are the observation that can be obtained from the above activity?

B) The chemical process related to respiration is given below.



- i) Calculate number of glucose moles in 45g of glucose.
- ii) What is the mass of  $\text{CO}_2$  that can be obtained by burning 90g of glucose?

- (2) The steps of an experiment designed by a student to identify oxygen gas produced during the photosynthesis were as follows.
- 1) Water was boiled up to the boiling point in a beaker.
  - 2) A small amount of  $\text{NaHCO}_3$  was added to the beaker.
  - 3) Inserted some hydrilla plants in to the beaker and cover it by using funnel and test tube was kept downwards on the neck of the funnel.
  - 4) Gas was collected in the test tube.
  - 5) The gas collected in the test tube was tested using burning splinter.
- A) i) Why it is needed to boil the water in the beaker?  
ii) Why it is needed to cool up water to the room temperature?  
iii) Why did he add some sodium carbonate to water in the beaker?  
iv) What is the observation of glowing splinter if the gas collected in the test tube was oxygen?  
v) What is the reason of selecting a plant like hydrilla for this experiment?
- B) i) Write the balanced chemical equation for the process when a plant leaf exposes to the sunlight.  
ii) Write the steps of simple experiment could be used to confirm that the plant has not been produced food at the yellow colour plant leaves.