

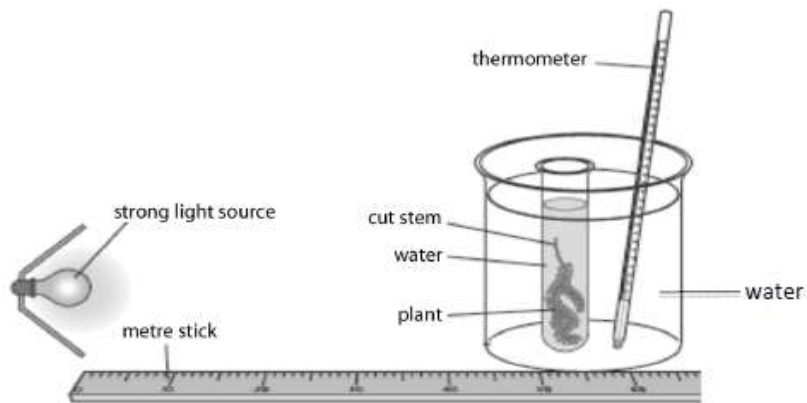


Biology
Leaving Certificate
Ordinary Level

Past Exam Questions on
Photosynthesis

Q7 Section B 2013

7. (a) (i) Where in a plant cell does photosynthesis take place?
- (ii) Name the gas released during photosynthesis.
- (b) Answer the following questions in relation to an investigation that you carried out to study the effect of light intensity or carbon dioxide concentration on the rate of photosynthesis.



Tick the factor you will refer to.

Light intensity	
CO ₂ concentration	

- (i) Name the plant that you used.
- (ii) How did you vary the light intensity or the carbon dioxide concentration?

- (iii) Name **one** factor that you kept constant during the investigation.

- (iv) How did you keep that factor constant?

- (v) How did you measure the rate of photosynthesis?

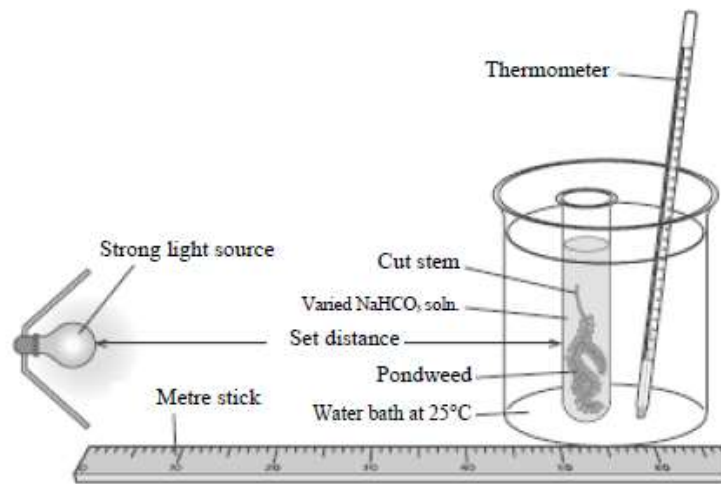
- (vi) What was the result of your investigation?

Q14 Part (b) Section C 2012

- (b) (i) In leaf cells, which chemical traps light energy for photosynthesis?
- (ii) Water for photosynthesis enters the roots of plants by osmosis.
What is meant by *osmosis*?
- (iii) During photosynthesis water is split into three products.
 - 1. Name **each** of these **three** products.
 - 2. Name the stage of photosynthesis during which water molecules are split.
- (iv) Carbon dioxide (CO₂) is also needed for photosynthesis.
Where does CO₂ enter the leaf?
- (v) A market gardener wants to increase the vegetable yield in his greenhouses.
Suggest **two** ways he may achieve this.

Q12 Section C 2011

12. (a) (i) What is meant by the term *photosynthesis*?
- (ii) A gas from the air is needed for photosynthesis.
Name this gas.
- (iii) Name the part of a plant cell in which photosynthesis takes place. (9)
- (b) (i) Write a balanced equation for photosynthesis.
- (ii) Plants contain the green pigment chlorophyll.
What is the role of chlorophyll in photosynthesis?
- (iii) The apparatus shown below may be used to investigate the effect of an environmental factor on the rate of photosynthesis.
1. Name any **two** environmental factors affecting photosynthesis that could be investigated using the apparatus shown.
 2. How would you measure the rate of photosynthesis using the apparatus below?



(24)

- (c) Enzymes are used in many processes in both plants and animals.
- (i) What is an enzyme?
 - (ii) Name any **one** enzyme, **and** its substrate, **and** its product.
 - (iii) The rate of activity of enzymes can be affected by various factors.
Name any **two** factors that can affect enzyme activity.
 - (iv) Enzymes are sometimes immobilised in industrial processes.
What is meant by the term *immobilised* in relation to enzymes?
 - (v) Give **one** advantage of using immobilised enzymes. (27)

Q12 Part (c) Section C 2010

- (c) (i) Draw a labelled diagram of the apparatus you used to investigate the effect of light intensity or carbon dioxide concentration on the rate of photosynthesis.
- (ii) How did you vary the light intensity or the carbon dioxide concentration?
- (iii) How did you measure the rate of photosynthesis?
- (iv) What is the relationship between the rate of photosynthesis and either the light intensity or the carbon dioxide concentration
- (v) Most Irish tomatoes are grown in greenhouses. State two ways a commercial producer could increase her/his crop yield of tomatoes. (24)

Q12 Section C 2008

12. (a) (i) In what main part of a plant does most photosynthesis take place?
(ii) In what cell structure does photosynthesis take place? (9)
- (b) (i) What is the main source of energy for photosynthesis?
(ii) Suggest two reasons why life on earth might not continue without photosynthesis.
(iii) In photosynthesis water (H₂O) is split into three products.
1. Name these three products.
2. State what happens to each of these products. (27)
- (c) Describe an activity that you carried out to investigate the influence of light intensity or carbon dioxide concentration on the rate of photosynthesis. Include a diagram of the apparatus that you used in your answer. (24)

Q11 Section C 2005

11. (a) (i) Complete the following equation, which is a summary of photosynthesis.
 $6\text{CO}_2 + 6\text{H}_2\text{O} + \text{light} + \text{chlorophyll} \longrightarrow$
(ii) Where in the cells of a leaf is chlorophyll found? (9)
- (b) (i) Light energy trapped by chlorophyll is used to split water. List three products that result when water is split.
(ii) Describe what happens to each of the three products that you have listed in (i).
(iii) Carbon dioxide is essential for photosynthesis. Where does it enter the leaf?
(iv) From your knowledge of photosynthesis suggest a way to increase the yield of plants such as lettuces in a greenhouse. (24)
- (c) (i) Some of the carbohydrates produced in photosynthesis are used in respiration. What is respiration?
(ii) Suggest one reason why living organisms need to respire.
(iii) What is aerobic respiration?
(iv) Respiration can also be anaerobic. Which of the two types of respiration releases more energy?
(v) Anaerobic respiration by micro-organisms is called fermentation. Give one example of industrial fermentation, including the type of micro-organism and the substance produced. (27)