

# 1

90928



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## Level 1 Biology, 2016

### 90928 Demonstrate understanding of biological ideas relating to the life cycle of flowering plants

9.30 a.m. Wednesday 23 November 2016

Credits: Four

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of biological ideas relating to the life cycle of flowering plants.	Demonstrate in-depth understanding of biological ideas relating to the life cycle of flowering plants.	Demonstrate comprehensive understanding of biological ideas relating to the life cycle of flowering plants.

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

**You should attempt ALL the questions in this booklet.**

If you need more space for any answer, use the page(s) provided at the back of this booklet and clearly number the question.

Check that this booklet has pages 2–11 in the correct order and that none of these pages is blank.

**YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.**

**TOTAL**

ASSESSOR'S USE ONLY

**QUESTION ONE: SEEDS AND SEED DISPERSAL**

The pictures below show some seeds and different ways that they can be dispersed.



Common gecko eating  
kawakawa fruit.

[www.moasark.co.nz/2015/02/03/  
lizards-berries-seed-dispersal/](http://www.moasark.co.nz/2015/02/03/lizards-berries-seed-dispersal/)

Dandelion seeds.

[http://sciencelearn.org.nz/Science-Stories/  
Seeds-Stems-and-Spores/Sci-Media/Images/  
Dandelion-seeds](http://sciencelearn.org.nz/Science-Stories/Seeds-Stems-and-Spores/Sci-Media/Images/Dandelion-seeds)

Kowhai seeds.

[www.naturespic.com/NewZealand/  
image.asp?id=41600](http://www.naturespic.com/NewZealand/image.asp?id=41600)

Discuss how seed dispersal occurs and why it is important in the life cycle of a flowering plant.

Your answer should:

- describe ways that seeds can be dispersed
- explain how the structure of a seed and environmental factors work together to allow for successful seed dispersal.

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**QUESTION TWO: INVESTIGATING PHOTOSYNTHESIS**

Photosynthesis is an important process that occurs inside plants. Photosynthesis helps the plant capture energy, and provides products needed by the plant to survive and grow.

- (a) The rate of photosynthesis is affected by environmental factors.

Study the graphs below that show how the rate of photosynthesis is affected by three environmental factors.

Complete the tables to describe the trend shown in each graph AND explain why each trend occurs.

**Table 1**

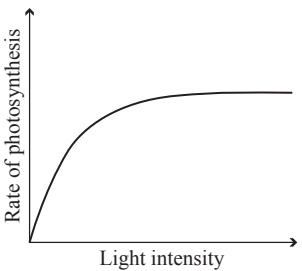
Environmental Factor One	Graph	Description of the trend shown in the graph
Light intensity		
Explanation of why the trend shown in the graph occurs		

Table 2

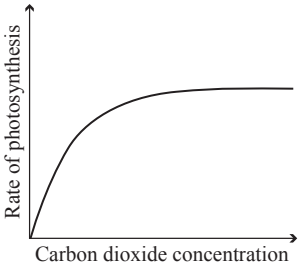
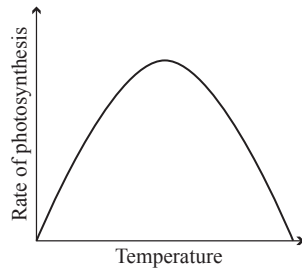
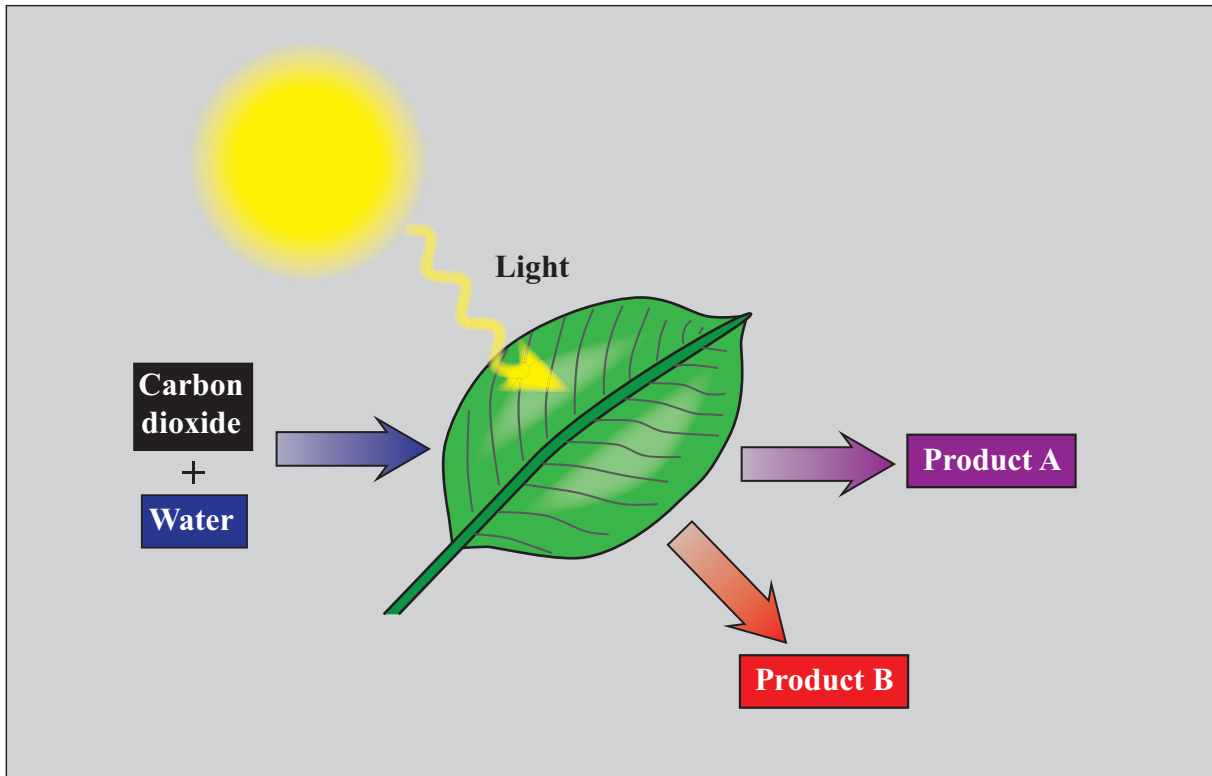
Environmental Factor Two	Graph	Description of the trend shown in the graph
Carbon dioxide concentration		
Explanation of why the trend shown in the graph occurs		

Table 3

Environmental Factor Three	Graph	Description of the trend shown in the graph
Temperature		
Explanation of why the trend shown in the graph occurs		

- (b) During photosynthesis, raw materials are converted into new substances or products that can be used for plant life processes. The new substances can be used by the plant immediately, or stored for later use.



Adapted from: [http://plantcellbiology.masters.grkraj.org/html/Plant\\_Cell\\_Biochemistry\\_And\\_Metabolism6-Plant\\_Cell\\_Energy\\_transductions2-Photosynthesis\\_files/image010.gif](http://plantcellbiology.masters.grkraj.org/html/Plant_Cell_Biochemistry_And_Metabolism6-Plant_Cell_Energy_transductions2-Photosynthesis_files/image010.gif)

Discuss how and why the products of photosynthesis are used by the plant or stored for later use.

Your answer should:

- describe the products of photosynthesis and how they are formed
- explain how and why the products of photosynthesis are used by the plant for other life processes such as respiration and growth
- explain how and why some of the products of photosynthesis are stored by the plant.

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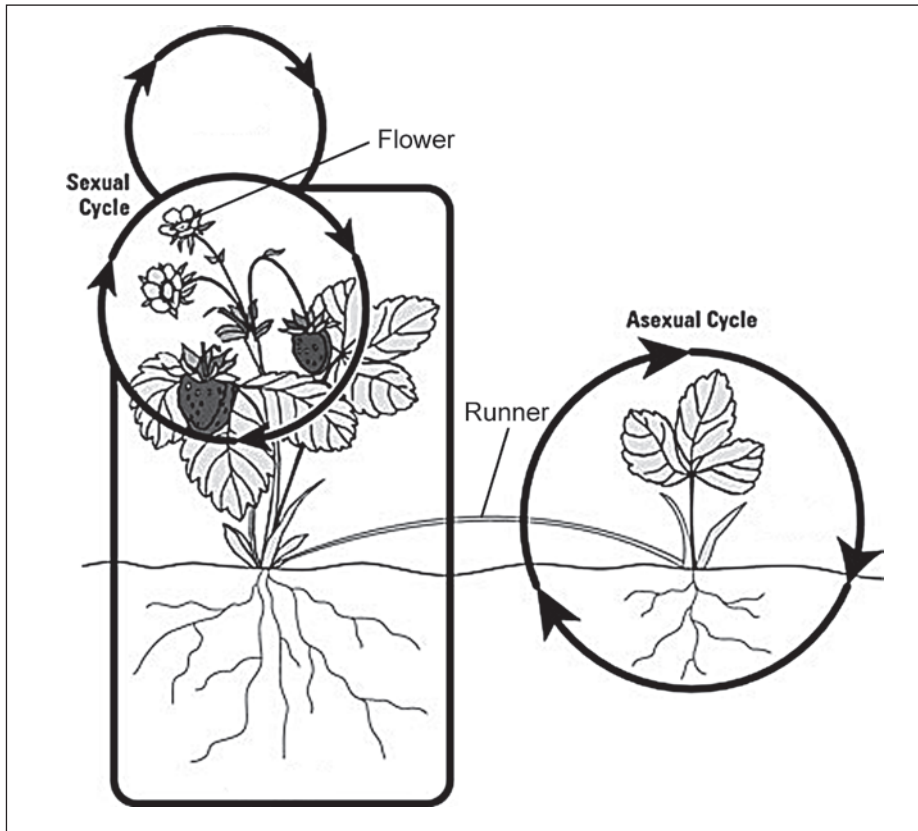


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### QUESTION THREE: FLOWERING PLANT REPRODUCTION

Some flowering plants can reproduce in two ways: both sexually and asexually. A diagram of a strawberry plant's two reproduction cycles is shown below as an example.



Adapted from: <http://www.dummies.com/how-to/content/plant-reproduction.html>

Discuss the advantages and disadvantages to the plant of sexual and asexual reproduction.

Your answer should:

- describe sexual and asexual reproduction in plants
- explain the advantages and disadvantages to the plant of reproducing sexually
- explain the advantages and disadvantages to the plant of reproducing asexually
- compare and contrast the advantages and disadvantages to the plant of sexual and asexual reproduction.

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