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SUBJECT:	<b>Agribusiness</b>
PAPER NUMBER:	Controlled – Unit 1
DATE:	29 <sup>th</sup> May 2018
TIME:	10:00 a.m. to 11:35 a.m.

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**THIS PAPER SHOULD BE RETURNED TO THE INVIGILATOR  
AFTER THE EXAMINATION.**

**Name of candidate** \_\_\_\_\_

**I.D. number** \_\_\_\_\_

**School** \_\_\_\_\_

**Class** \_\_\_\_\_

Answer **ALL** questions in the space provided.

**Scenario:**

Everyone depends on agriculture and farming to provide food, fuel, fabrics and other goods that make life as we know it possible. Agriculture and farming are a clear example of how we depend on our environment. Without the proper knowledge, certain agricultural practices can have a negative impact on the environment.

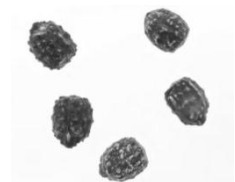
Your school has embarked on an interesting project to promote correct agricultural practices to the Maltese people. You are part of this project and you need to show that you are knowledgeable about agricultural science.

**Question 1**

**K1 (4 marks)**

a. Label **ALL** the structures in the Poinsettia figure using the structures below.

Leaves	Stem	Flower	Seed
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(2)

Figure 1 – The Poinsettia

(Image modified from: <https://www.hallmark.com>)

b. Label **ALL** the structures in the green pepper figure using the structures below.

Leaves	Stem	Flower	Fruit
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(2)

Figure 2 – The green pepper

(Image modified from: <https://www.gettyimages.com>)

**(Total: 4 marks)**

***Please turn the page.***

**Question 2**

**K2 (4 marks)**

a. Describe how the parenchyma cell is different from the sclerenchyma cell. Provide **TWO** differences.

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(1)

b. What are the roles of the xylem and the phloem in a plant?

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(1)

c. What happens if there are no mitochondria in a cell?

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(0.5)

d. What is the chloroplast?

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(0.5)

e. Describe how the cell wall is different from the cell membrane. Provide **TWO** differences.

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(1)

**(Total: 4 marks)**

**Question 3**

**K3 (4 marks)**

a. The picture below illustrates the life-cycle of a zucchini plant. Label each stage in the space provided near each picture by choosing the correct word from the table below. Each word should be used only once. The first has been given for you as an example.

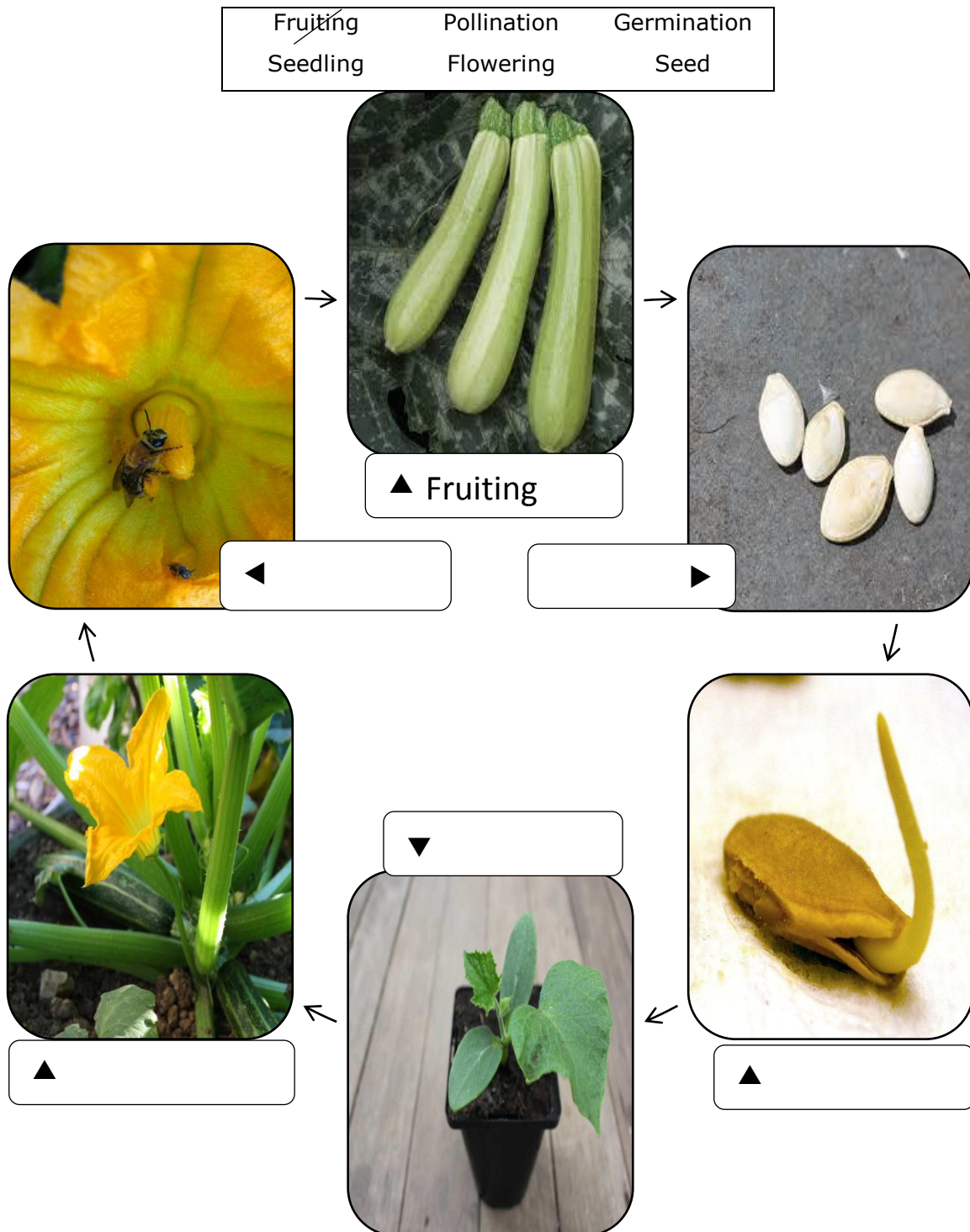


Figure 3 – The Lifecycle of the Zucchini plant

[www.jungleseeds.co.uk](http://www.jungleseeds.co.uk), [www.healthbenefitstimes.com](http://www.healthbenefitstimes.com), [www.cookingwithrosetta.com](http://www.cookingwithrosetta.com), <https://content.ces.ncsu.edu>,  
[www.instructables.com](http://www.instructables.com), [www.podgardening.co.nz](http://www.podgardening.co.nz) (1)

***This question continues on the next page.***

b. Outline what happens during germination.

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(1)

c. Outline the process of fruit development.

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(1)

d. Outline the process of pollination.

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(1)

**(Total: 4 marks)**

**Question 4****C1 (6 marks)**

The onion and the cabbage are an example of a monocot plant and a dicot plant respectively. Fill in the following table to explain the morphological differences of monocots and dicots using the onion and the cabbage as examples. Describe **ONE** feature for each structure.

<b>Structure</b>	<b>Monocot e.g. Onion</b>	<b>Dicot e.g. Cabbage</b>
Leaves		
Roots		
Stem		
Flower		
Fruit		
Seed		

(6)

**(Total: 6 marks)**

**Question 5**

**K5 (4 marks)**

Fruits and vegetables are vital for a healthy balanced diet. They are a source of important nutrients such as vitamins and minerals.

State whether the following statements are true or false. Circle the correct answer.

a. Vegetables are a poor source of fibre.

True or False (0.5)

b. Fruits are a rich source of minerals, such as calcium.

True or False (0.5)

c. Citrus fruits are a good source of Vitamin C.

True or False (0.5)

d. Legumes are a good source of fat.

True or False (0.5)

e. Fat is commonly found in vegetable oil, nuts and seeds.

True or False (0.5)

f. Sugars in fruit are important for the build-up of muscles in humans.

True or False (0.5)

g. Too much intake of carrots can lead to a deficiency in vitamin A.

True or False (0.5)

h. Bananas are a good source of Potassium.

True or False (0.5)

**(Total: 4 marks)**

**Question 6**

**C3 (6 marks)**

a. Identify and discuss **ONE** advantage of using manure for vegetable production.

Advantage: \_\_\_\_\_  
\_\_\_\_\_ (1)

Explanation: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ (2)



b. Identify and discuss **ONE** disadvantage of using manure for vegetable production.

Disadvantage: \_\_\_\_\_  
\_\_\_\_\_ (1)

Explanation: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ (2)

**(Total: 6 marks)**

**Question 7**

**K8 (4 marks)**

Good crop production may often require the application of lime, fertiliser, etc. Soil analysis enables you to find out the makeup of the soil and help you determine how much lime and fertiliser you need to apply.

Why is it important to analyse soil parameters? Give an answer for **FOUR** soil parameters of your choice from the table below.

pH	Potassium	Calcium	Sodium
Nitrogen	Phosphorus	Conductivity	Chloride

Soil Parameter 1: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ (1)

Soil Parameter 2: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ (1)

Soil Parameter 3: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ (1)

Soil Parameter 4: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ (1)

**(Total: 4 marks)**

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**Question 8**

**K9 (4 marks)**

Consider the following table of biotic and abiotic soil factors:

Earthworms	Organic matter	Bacteria
Mycorrhizae	Soil structure	Soil porosity

a. Choose **TWO** abiotic factors and describe how each can affect plant growth:

Abiotic factor 1: \_\_\_\_\_ (0.5)

Explanation: \_\_\_\_\_  
\_\_\_\_\_ (0.5)

Abiotic factor 2: \_\_\_\_\_ (0.5)

Explanation: \_\_\_\_\_  
\_\_\_\_\_ (0.5)

b. Choose **TWO** biotic factors and describe how each can affect plant growth:

Biotic factor 1: \_\_\_\_\_ (0.5)

Explanation: \_\_\_\_\_  
\_\_\_\_\_ (0.5)

Biotic factor 2: \_\_\_\_\_ (0.5)

Explanation: \_\_\_\_\_  
\_\_\_\_\_ (0.5)

**(Total: 4 marks)**

**Question 9**

**K10 (4 marks)**

Read the following scenarios which can improve soil fertility and underline the most suitable activity:

- a. The application of a substance to correct the high levels of acidity in a soil. (0.5)
- i. Soil topping
  - ii. Liming
  - iii. Fertilisation
- b. This substance increases aeration and water infiltration when mixed with soil. (0.5)
- i. Fertiliser
  - ii. Sand
  - iii. Lime
- c. The process of covering the topsoil with plant material, such as leaves and crop residues or with plastic. This would decrease weed growth. (0.5)
- i. Crop rotation
  - ii. Increase sand content
  - iii. Mulching
- d. Adding substances which contain one or more plant nutrients in order to maintain soil fertility, improve crop development and yield. (0.5)
- i. Fertilisation
  - ii. Increase sand content
  - iii. Mulching
- e. The act of increasing the amount of soil in a field to increase soil depth. (0.5)
- i. Soil topping
  - ii. Increase sand content
  - iii. Liming

***This question continues on the next page.***

- f. This is the cultivation of different crops in succession. It is done to help manage soil fertility and to help avoid or reduce problems with soil pests and diseases. (0.5)
- i. Tilling
  - ii. Increase sand content
  - iii. Crop rotation
- g. This is done by leaving plant residue on the soil surface, mowing weeds, and by adding animal manure. (0.5)
- i. Addition of organic matter
  - ii. Crop rotation
  - iii. Soil topping
- h. This practice helps to prepare soil for sowing and planting by improving soil texture and increase water and air penetration. (0.5)
- i. Liming
  - ii. Tilling
  - iii. Addition of organic matter

**(Total: 4 marks)**