

MATRICULATION AND SECONDARY EDUCATION CERTIFICATE EXAMINATIONS BOARD  
UNIVERSITY OF MALTA, MSIDA

**SECONDARY EDUCATION CERTIFICATE LEVEL**

**MAY 2015**

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<b>SUBJECT:</b>	<b>Agribusiness</b>
<b>PAPER NUMBER:</b>	Controlled Assessment – Unit 1
<b>DATE:</b>	25 <sup>th</sup> May 2015
<b>TIME:</b>	10:00 a.m. to 12:00 noon

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

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

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

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

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



**QUESTION 2 (K3)**

Underline the best answer to define the listed terms.

- a. *What is DNA?*
  - i. A cell organelle
  - ii. A double stranded helix in which all the genetic information is found
  - iii. The male gamete
  - iv. One variation of a given gene e.g. Blue for eye colour.
  
- b. *An allele is:*
  - i. A kind of cell in reproduction.
  - ii. One variation of a given gene e.g. Blue for eye colour.
  - iii. The genetic information which determines the species.
  - iv. A cell organelle
  
- c. *What are gametes?*
  - i. Gametes are the male and female cells which fuse during fertilisation.
  - ii. Gametes are the male and female reproductive organs.
  - iii. Gametes are the male sex cells found in plants known as pollen.
  - iv. Gametes are a group of embryos
  
- d. *A gene is:*
  - i. An inherited chromosome.
  - ii. An inherited DNA sequence.
  - iii. Part of the cell membrane
  - iv. A cell organelle

(1 mark each)

**QUESTION 3 (K4)**

Mendel's three Laws are:

- (a) the **Law of Segregation**
- (b) the **Law of Independent Assortment**
- (c) the **Law of Dominance**

Which of these Laws can be used to explain the following?

- a. Genes for flower colour are not inherited together with the genes of leaf size:
- 

- b. A flower inherits one allele from the mother and another from its father for every trait:
- 

(2 marks each)

**QUESTION 4 (K5)**

The **roots**, the **stem** and the **leaf** are three organs that are important for the intake and transfer of water from the soil to various parts of the plant.

Describe the role of these organs in the uptake and transfer of water and nutrients.

a. *Root:* \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ (1 mark)

b. *Stem:* \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ (1 mark)

c. *Leaf:* \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ (2 marks)

**QUESTION 5 (C3)**

Answer the following questions.

Petunias are long-day plants.

- a. Does this plant flower in winter or in summer?

\_\_\_\_\_ (1 mark)

- b. Why?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ (2 marks)

- c. Explain what can be done to make this plant flower in December?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ (3 marks)

*Please turn the page.*

**QUESTION 6 (C4)**

A farmer is growing a crop of strawberries. He uses a drip irrigation system to water the plants. After sampling the field's soil, the following results were obtained from the soil laboratory:

Test	Result	Classification
<i>pH</i>	8.31	Strongly alkaline
<i>Electrical Conductivity (EC)</i>	318 $\mu\text{S}/\text{cm}$	Non-saline
<i>Chloride</i>	85.5mg/kg	Low
<i>Sodium</i>	90mg/kg	Low
<i>Potassium</i>	70mg/kg	Low
<i>Phosphorus</i>	93mg/kg	Very High
<i>Nitrate</i>	45.7mg/kg	Medium

By considering the soil test results obtained, carefully choose the best answer:

- a. Considering that rain water is less saline than other sources of water, what do you think is the farmer's water source?
  - i. Groundwater
  - ii. Tap water
  - iii. Rain water
  - iv. Sea water
  
- b. What are the effects of having a soil pH of 8.31 on the nutrition of the crop?
  - i. Some nutrients (especially micro-nutrients) become more available for the plants
  - ii. Some nutrients (especially micro-nutrients) become less available for the plants
  - iii. Micro-nutrients are not affected by pH
  - iv. No nutrients are absorbed by the plants
  
- c. Choose the best NPK fertilizer from the following:
  - i. 10 – 30 – 10
  - ii. 10 – 10 – 30
  - iii. 30 – 10 – 10
  - iv. 10 – 10 – 10

(2 marks each)

**QUESTION 7 (K 10)**

Soil texture is the percentage amount of sand, silt and clay in a particular soil.

Soil structure is the way soil particles stick to each other.

These affect the water and air in the soil.

Briefly explain what are the **effects on plant growth** when a farmer grows his crops in the following soils:

- a. Soil rich in clay

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*(1 mark)*

- b. Soil rich in sand

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*(1 mark)*

- c. A soil with a granular structure

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*(1 mark)*

- d. A soil with a platy structure

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*(1 mark)*

*Please turn the page.*

**QUESTION 8 (C5)**

Tick the best answer for the following statements.

Soil fertility can be improved by:

- i. Adding organic matter to increase the soil's water retention

\_\_\_\_\_ True

\_\_\_\_\_ False

- ii. Adding lime to a soil with a high pH

\_\_\_\_\_ True

\_\_\_\_\_ False

- iii. Adding nitrogen fertilizers in a soil rich in nitrogen

\_\_\_\_\_ True

\_\_\_\_\_ False

- iv. Tilling the soil to increase aeration

\_\_\_\_\_ True

\_\_\_\_\_ False

- v. Adding sand to improve drainage

\_\_\_\_\_ True

\_\_\_\_\_ False

- vi. Remove earthworms by gassing the soil

\_\_\_\_\_ True

\_\_\_\_\_ False

*(1 mark each)*

**\*End of Paper\***