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

SECONDARY EDUCATION CERTIFICATE LEVEL

MAY 2015

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

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

Name of candidate _____

I.D. number

School

Class

Answer <u>ALL</u> the questions contained in this paper.

Vocational Context:

You are employed with a plant nursery in *Burmarrad*. The manager decided to open the business on Sundays during which educational sessions will be held for the customers. During these sessions, the basic principles of growing plants will be explained by experts and participants will have the opportunity to ask questions on the subject.

Your employer has asked you to prepare some educational material to be distributed during these sessions. S/He has prepared a number of questions to help you in the preparation of the short publication.

Answer the questions as best as you can. Your answers will be used to prepare a short booklet that will be distributed for free during these Sunday sessions.

QUESTION 1 (K1)

From the list below, choose the organs which form part of the shoot system and those which form part of the root system. Write the organs in the correct table column.

Leaf	Stem	Flower	Tuber	Rhizome	Fruit
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Bulb

Corm

Shoot system	Root system

(0.5 marks each)

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:

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. <i>Root:</i>	
	(1 mark)
b. <i>Stem:</i>	
	(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
pH	8.31	Strongly alkaline
Electrical Conductivity (EC)	318 µS/cm	Non-saline
Chloride	85.5mg/kg	Low
Sodium	90mg/kg	Low
Potassium	70mg/kg	Low
Phosphorus	93mg/kg	Very High
Nitrate	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 10ii. 10 - 10 - 30iii. 30 - 10 - 10iv. 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

	(1 mark)
b. Soil rich in sand	
	(1 mark)
c. A soil with a granular structure	
	(1 mark)
d. A soil with a platy structure	
	(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