SEC35/c1.25m

L-Università ta' Malta

MATRICULATION AND SECONDARY EDUCATION CERTIFICATE EXAMINATIONS BOARD

**SECONDARY EDUCATION CERTIFICATE LEVEL**
**2025 MAIN SESSION**

| | |
|---|---|
| SUBJECT: | **Agribusiness** |
| PAPER NUMBER: | Controlled – Unit 1 |
| DATE: | 15th May 2023 |
| TIME: | 10:00 a.m. to 11:35 a.m. |

# 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**

- Melix is an agribusiness enterprise is looking for interns.
- The interns need to be proficient in these topics:
  - the science of crops plants till harvest;
  - crop requirements throughout their growing stages;
  - marketing of agribusiness produce.

**Question 1** **K-2 (4 marks)**

a. Label the different plant cell components in Figure 1 below.

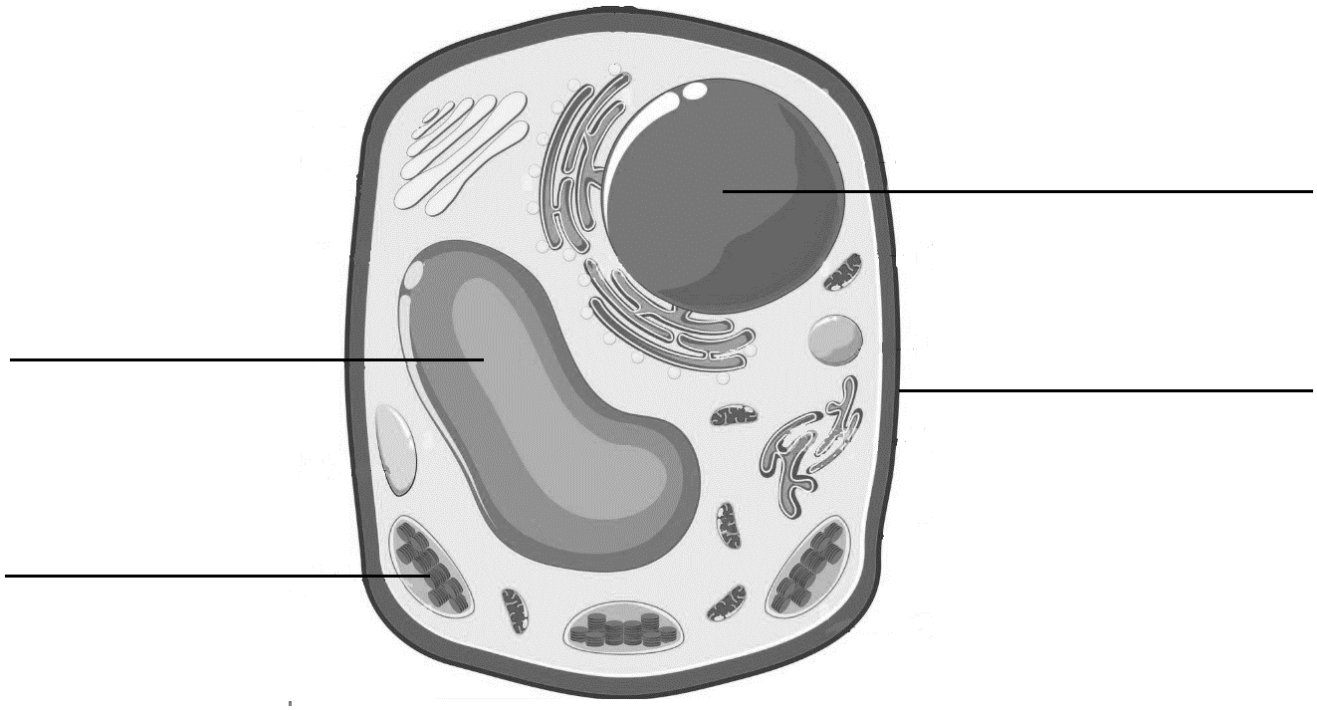

Figure 1: A typical plant cell (1)
*(Source: https://alamy.com)*

b. Identify the xylem and phloem in the monocot and dicot stems in Figures 2 and 3.

Dicot Stem:

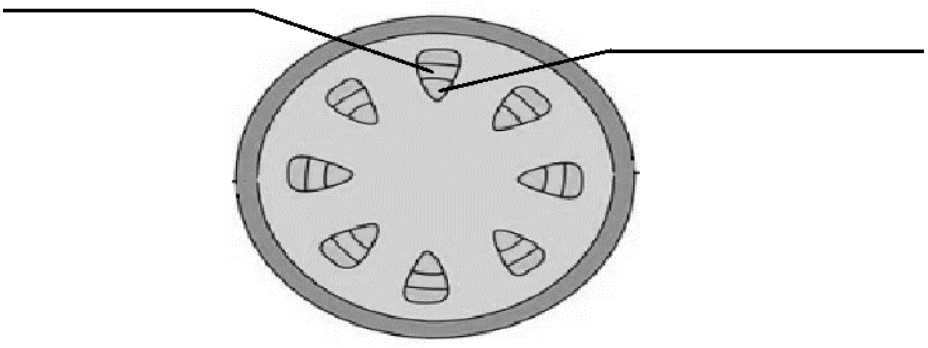

Figure 2: Cross-section for a typical dicot stem (0.5)
*(Source: https:// https://www.thesciencehive.co.uk/xylem-and-phloem-a-level)*

Monocot Stem:

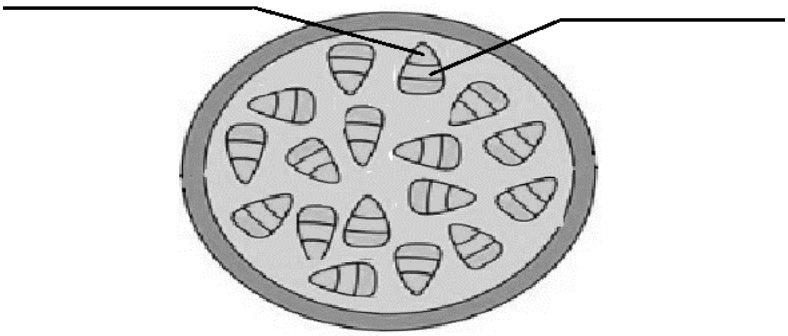

Figure 3: Cross-section for a typical monocot stem (0.5)

*(Source : https:// https://www.thesciencehive.co.uk/xylem-and-phloem-a-level)*

c. Describe the function of:

i. Cell Wall: _____

_____

_____

_____

_____ (0.5)

ii. Mitochondria: _____

_____

_____

_____

_____ (0.5)

iii. The xylem as a transport system: _____

_____

_____

_____

_____ (0.5)

iv. The phloem as a transport system: _____

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_____ (0.5)

**Question 2** **C-1 (6 marks)**

a. Classify the leaves in Table 1 below as monocotyledons or dicotyledons by ticking ☑ the correct check-box for each.

Table 1: Typical leaves of monocotyledons and dicotyledons

| | Leaf | Monocotyledon | Dicotyledon |
|---|---|---|---|
| (a) |  | ☐ | ☐ |
| (b) |  | ☐ | ☐ |
| (c) |  | ☐ | ☐ |
| (d) |  | ☐ | ☐ |

*(Source : https://nph.onlinelibrary.wiley.com/doi/full/10.1111/nph.15371)* (2)

b. Refer to Figure 4 to explain whether the following cross-section images belong to a monocotyledon or a dicotyledon. Your answer should include direct reference to vascular bundles.

i. 

ii. 

Figure 4: Microscopic structures from different monocotyledons and dicotyledons
*(Source: www.vectorstock.com)*

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_____ (2)

c. Differentiate between:

i. The external structure of the leaf system of wheat and zucchini:

_____

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_____

_____ (1)

ii. The internal seed structure of wheat and zucchini:

_____

_____

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_____

_____ (1)

**Question 3** **K-3 (4 marks)**

a. Name the life cycle stages of a pea plant.

Life stage 1: _____ (0.2)

Life stage 2: _____ (0.2)

Life stage 3: _____ (0.2)

Life stage 4: _____ (0.2)

Life stage 5: _____ (0.2)

b. Organise the stages of the life cycle of a pea plant by assigning a number next to the pictures in Table 2 below. (1 represents the first stage and 5 represents the last.)

Table 2: Pea life stages

| Image of life stage | Order in life stage (1-5) |
|---|---|
|  *(Source: https://www.thespruce.com)* | _____ (0.2) |
|  *(Source: https://www.bobvila.com)* | _____ (0.2) |
|  *(Source: https://www. https://gobotany.nativeplanttrust.org/)* | _____ (0.2) |

| | |
|---|---|
|  <br>*(Source: https://www.daviddarling.info)* | _____<br>(0.2) |
|  <br>*(Source: https://www.legumehub.eu/)* | _____<br>(0.2) |

c. Outline the **FIVE** stages in the life cycle of a pea plant.

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_____ (2)

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**Question 4** **K-4 (4 marks)**

Personnel working within an agribusiness enterprise should be aware of potential hazards and possible risks.

a. Match different types of risks with hazards in a crop production enterprise, by drawing a line between them.

| | **Hazard** | **Risk** |
|---|---|---|
| i. | Fuel | Burns |
| ii. | Heavy objects | Heat stroke |
| iii. | Electricity | Back injury |
| iv. | Direct sunlight | Eye irritation |
| v. | Not wearing the appropriate PPEs | Electric Shock |

(1)

b. List **FOUR** pieces of information needed when calling for help in case of an emergency.

Information 1: _____ (0.25)

Information 2: _____ (0.25)

Information 3: _____ (0.25)

Information 4: _____ (0.25)

c. State **TWO** reasons for maintaining a safe work environment in a crop production enterprise.

_____

_____

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_____ (2)

**Question 5** **K-6 (4 marks)**

Terms like market, demand and supply are commonly used when professionally managing an agribusiness enterprise.

a. Define the term 'market' in relation to agribusiness.

_____

_____ (1)

b. Define the terms 'demand' and 'supply' in relation to agribusiness.

Demand:

_____

_____ (0.5)

Supply:

_____

_____ (0.5)

c. Describe the role of the following actors in agribusiness.

| Agribusiness entrepreneur | Producer |
|---|---|

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_____ (2)

**Question 6** **K-7 (4 marks)**

a. Define the following terms:

i. plant macronutrients

_____

_____ (0.5)

ii. plant micronutrients

_____

_____ (0.5)

b. Select by underlining **ONE** appropriate nutrient in brackets for each of the following crop requirements.

i. Healthy flowering and fruiting: (Nitrogen / Sulfur / Potassium) (0.25)

ii. Leaf growth: (Nitrogen / Calcium / Phosphorus) (0.25)

iii. Healthy rooting: (Sulfur / Phosphorus / Calcium) (0.25)

iv. Fruit turgidity: (Nitrogen / Calcium / Phosphorus) (0.25)

c. Relate the following deficiency symptoms to **ONE** typical missing nutrient causing them:

i. Necrosis on shoot tips: _____ (0.4)

ii. Deformed/stunted new leaves: _____ (0.4)

iii. Leaf margin necrosis: _____ (0.4)

iv. Interveinal chlorosis of new leaves: _____ (0.4)

v. Total chlorosis on new leaves: _____ (0.4)

**Question 7** **K-9 (4 marks)**

Soil sampling is part of good practice to get to know the health of a soil.

a. List **TWO** tools required to take soil samples.

Tool 1: _____ (0.5)

Tool 2: _____ (0.5)

b. List **FOUR** of the most commonly measured parameters in soil and water analysis.

Parameter 1: _____ (0.25)

Parameter 2: _____ (0.25)

Parameter 3: _____ (0.25)

Parameter 4: _____ (0.25)

c. Outline **FOUR** reasons why it is important to measure soil and water parameters.

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**Question 8** **K-10 (4 marks)**

This question is about soils and soil fertility.

a. Define soil fertility.

_____

_____ (1)

b. Outline the following Maltese soil types:

Calcisols:

_____

_____ (0.5)

Leptosols:

_____

_____ (0.5)

c. Relate the texture of a Leptosol soil to water and nutrient availability.

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_____ (2)

**Question 9** **C-5 (6 marks)**

a. Distinguish between biotic and abiotic soil factors.

_____

_____

_____

_____ (2)

b. Explain how the following **TWO** activities can improve soil fertility.

Crop rotation: _____

_____

_____

_____ (1)

Mulching: _____

_____

_____

_____ (1)

c. Describe how **ONE** biotic and **ONE** abiotic factor affect plant growth.

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