



L-Università
ta' Malta

MATRICULATION AND SECONDARY EDUCATION CERTIFICATE
EXAMINATIONS BOARD

**SECONDARY EDUCATION CERTIFICATE LEVEL
2021 SUPPLEMENTARY SESSION**

SUBJECT:	Agribusiness
PAPER NUMBER:	Synoptic – Unit 1
DATE:	1 st November 2021
TIME:	9:00 a.m. to 11:05 a.m.

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

Answer ALL questions in the space provided.

Scenario

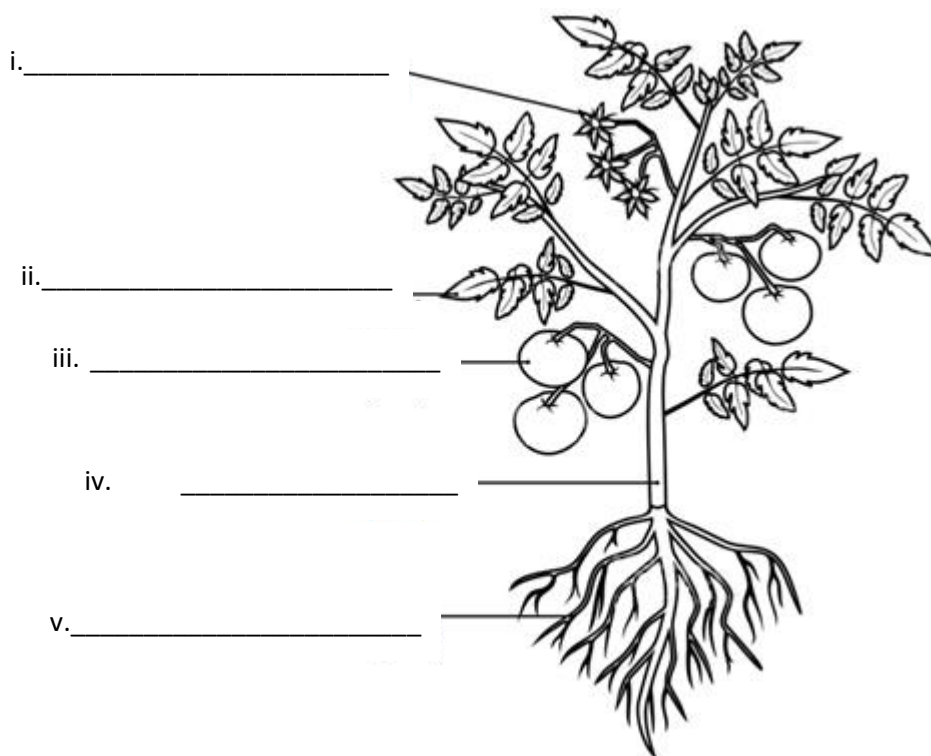
Sam works at an agribusiness outlet and he is instructed to assist customers, home growers and farmers, to:

- select the right produce;
- provide advice on the growing of the produce, including the correct use of fertilizers;
- advise on the right use of personal protection equipment and emergency equipment.

Question 1

K-1 (6 marks)

a. Identify the main organs of the tomato plant shown in Figure 1.



(2)

Figure 1: A tomato plant
(Source: <https://www.istockphoto.com/>)

b. Label the different organs of the bean plant in Figure 2 using the box below.

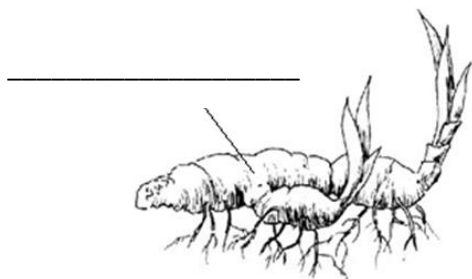
flower	flower bud	leaf	apical bud	fruit	seeds	stem	root
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Figure 2: A bean plant (2)

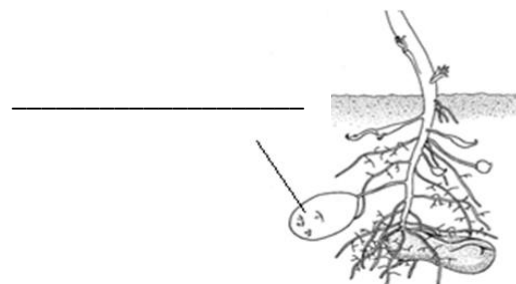
(Source: <https://www.twinkl.ie/illustration/green-bean-plant-bush-string-beans-pod-flower-biology-garden-diagram-ks1-bw-rgb>)

c. Label the different specialised versions of different crop/ornamental plants' organs in the below illustrations:



(Source: <https://amandablueeverett.wordpress.com>)

(0.4)



(Source: <http://getdrawings.com>)

(0.4)

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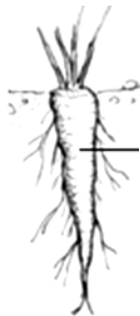
(Source: <https://www.clipartkey.com>)

(0.4)



(Source: <https://extension.uga.edu/publications/detail.html>)

(0.4)



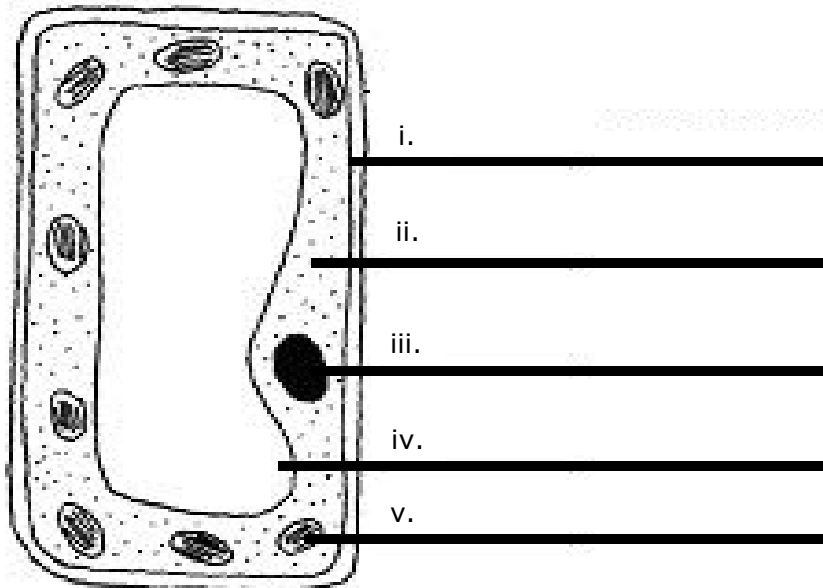
(Source: <http://bilingualbiology10.blogspot.com/2011/01>)

(0.4)

Question 2

K-2 (8 marks)

a. Label the different plant cell components in Figure 3.



(2)

Figure 3: A plant cell

(Source: <http://www.cikgunaza.com/2009/04/biology-form-4-cell.html>)

b. Identify the xylem and phloem in these monocotyledons' root and stem cross-sections (Figure 4).

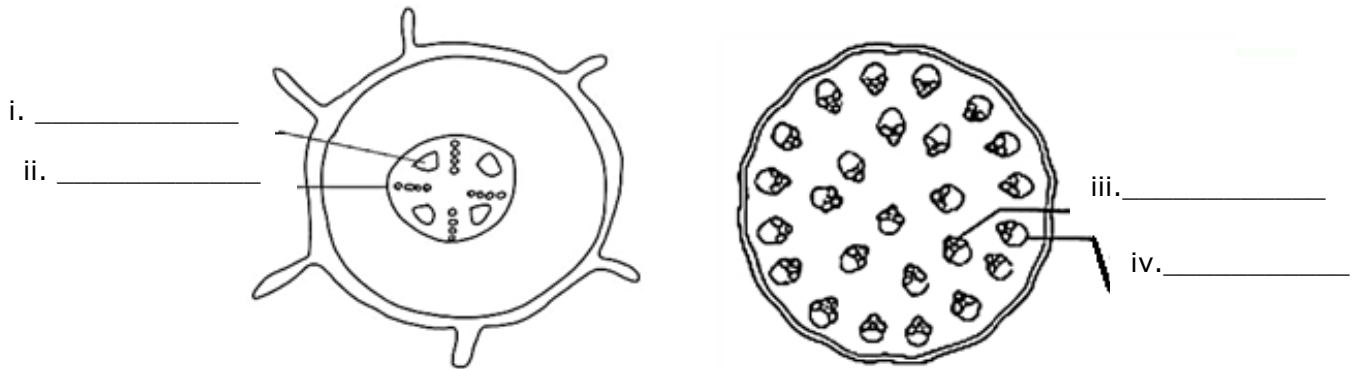


Figure 4: Root (left) and stem (right) cross-sections of monocots
(Source: <https://botany4u.neocities.org/readings/structure.html>)

(2)

c. Describe **ONE** function of each of the following:

i. Chloroplasts:

_____ (0.8)

ii. Mitochondria:

_____ (0.8)

iii. Nucleus:

_____ (0.8)

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iv. Vacuole:

_____ (0.8)

v. Cell wall:

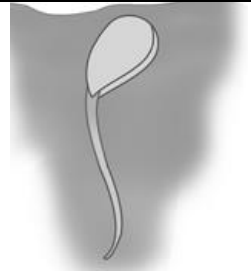
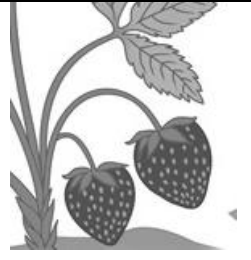
_____ (0.8)

Question 3

K-3 (8 marks)

Strawberries a popular crop with Maltese farmers.

- a. Name the life cycle stages of a strawberry.
- b. Organise the stages of the life cycle of a strawberry by numbering the pictures below in Figure 4 according to how one stage follows the other. The first stage (1) has been provided for you.
- c. Outline the stages of the life cycle of a strawberry following the sequence of events organised in the Question 3b.

		a. Stage Name	b. Order	c. Outline of Stage
E.g.		germination	1	The seed germinates in optimum conditions and develops in to a plant.
i.		_____ (0.5)	_____ (0.5)	_____ _____ _____ _____ (1)

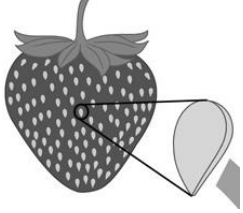
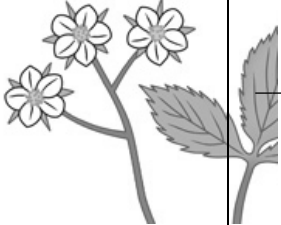

<p>ii.</p>		<p>_____</p> <p>(0.5)</p>	<p>_____</p> <p>(0.5)</p>	<p>_____</p> <p>_____</p> <p>_____</p> <p>_____ (1)</p>
<p>iii.</p>		<p>_____</p> <p>(0.5)</p>	<p>_____</p> <p>(0.5)</p>	<p>_____</p> <p>_____</p> <p>_____</p> <p>_____ (1)</p>
<p>iv.</p>		<p>_____</p> <p>(0.5)</p>	<p>_____</p> <p>(0.5)</p>	<p>_____</p> <p>_____</p> <p>_____</p> <p>_____ (1)</p>


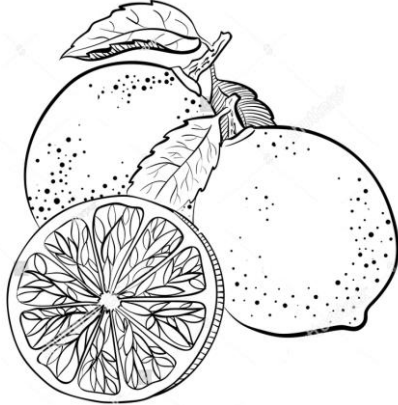


Figure 4: Life cycle of a strawberry
 (Source: <https://www.sciencefacts.net/plant-life-cycle.html>)

Please turn the page.

Question 4

K-5 (8 marks)

a. Identify the following crop types:

 <p>(Source: dreamstime.com)</p> <p>i. _____ (0.5)</p>	 <p>(Source: shutterstock.com)</p> <p>ii. _____ (0.5)</p>
 <p>(Source: shutterstock.com)</p> <p>iii. _____ (0.5)</p>	 <p>(Source: www.clker.com/)</p> <p>iv. _____ (0.5)</p>

b. Outline the following crop production types:

i. Hydroponic crop production:

(0.5)

ii. Aquaponic crop production:

(0.5)

Question 5

K-7 (8 marks)

a. Define the following terms:

i. Plant macronutrients:

_____ (1)

ii. Plant micronutrients:

_____ (1)

b. Select the appropriate macronutrient from the options below for the following crop requirements. Each macronutrient should be selected only **ONCE**.

Potassium	Sulfur	Nitrogen	Iron	Calcium	Phosphorus
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i. Leaf growth: _____ (0.5)

ii. Healthy rooting: _____ (0.5)

iii. Fruit turgidity: _____ (0.5)

iv. Healthy flowering: _____ (0.5)

c. Relate the following deficiency symptoms to **ONE** typical missing nutrient causing them. Each nutrient should be selected only **ONCE OR NOT AT ALL**.

Potassium	Nitrogen	Calcium	Phosphorus	Iron
Zinc	Magnesium	Boron	Sulfur	Copper

i. Leaf margin necrosis: _____ (0.5)

ii. Interveneal chlorosis of older leaves: _____ (0.5)

iii. Total chlorosis on new leaves: _____ (0.5)

iv. Total leaf chlorosis of older leaves: _____ (0.5)

v. Deformed new leaves: _____ (0.5)

vi. Leaf purpling: _____ (0.5)

vii. Interveneal chlorosis on new leaves: _____ (0.5)

viii. Necrosis of shoot tips: _____ (0.5)

Question 7

C-2 (12 marks)

a. Outline **FOUR** preventive measures required for maintaining a safe work environment in a crop production enterprise.

i. _____
_____ (1)

ii. _____
_____ (1)

iii. _____
_____ (1)

iv. _____
_____ (1)

b. Describe the use of the following items that should be present in a First Aid box according to legislation.

i. sterile eye wash: _____

_____ (1)

ii. personal protection shield for artificial breathing: _____

_____ (1)

iii. safety pins: _____

_____ (1)

iv. surgical gloves: _____

_____ (1)

c. Explain **TWO** ways of dealing with each of the following injuries.

i. cut: _____

_____ (1)

ii. electric shock: _____

_____ (1)

iii. burn: _____

_____ (1)

iv. eye irritation: _____

_____ (1)

Please turn the page.

Question 8

C-4 (12 marks)

a. Explain how a soil sample is taken.

_____ (4)

b. The results of soil and water samples for pH and electrical conductivity are shown in Table 1.

Table 1: Results of Soil and Water Samples

	pH	Conductivity ($\mu\text{S/cm}$)
Soil 1	6.99	4117
Soil 2	7.64	234
Irrigation water 1	5.50	185
Irrigation water 2	8.05	1903

i. Which of the two soil samples is more acidic? Why?

_____ (2)

ii. Which of the two irrigation water samples is more saline? Why?

_____ (2)

c. Justify a plant that would be the most suitable to be grown in the following conditions based on the parameters of Table 1 in Question 8b above.

Soil 1 with irrigation water 2	Soil 2 with irrigation water 1
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