higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

# NATIONAL CERTIFICATE (VOCATIONAL)

## PLANT PRODUCTION
## NQF LEVEL 2

(1011012)

**7 November 2022 (Y-paper)**
**13:00–16:00**

**This question paper consists of 9 pages.**

115Q1N2207

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**TIME: 3 HOURS**
**MARKS: 150**

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**INSTRUCTIONS AND INFORMATION**

1. Answer all the questions.
2. Read all the questions carefully.
3. Number the answers according to the numbering system used in this question paper.
4. Start each section on a new page.
5. Use only a blue or black pen.
6. Write neatly and legibly.

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## SECTION A

## QUESTION 1

1.1 Various options are given as possible answers to the following questions. Choose the answer and write only the letter (A–D) next to the question number (1.1.1–1.1.10) in the ANSWER BOOK.

1.1.1 Something that causes disease:

A Pathogen
B Vector
C Pest
D Parasite

1.1.2 Not active or growing at the moment, but can be active later:

A Growing season
B Dormant
C Canopy
D Schedule

1.1.3 A piece of equipment for measuring the water tension in the soil:

A Evaporation pan
B Tension meter
C Gauge
D Secateurs

1.1.4 A chemical used to kill unwanted plants:

A Herbicide
B Pesticide
C Fungicide
D IPM

1.1.5 A herbicide that stays active in the soil and gets absorbed by the plant roots:

A Systemic
B Residual
C Contact
D Dithane

1.1.6 A microscopic worm that eats the leaves and roots of a plant:

A Nematode
B Snails
C Fruit flies
D Bud mite

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1.1.7 A substance that keeps insect pests away:

A Repellent
B Fumigate
C Pesticides
D Dipterex

1.1.8 IPM stands for …

A Integrated Plant Management.
B Integrated Precautionary Measures.
C Integrated Pesticide Monitoring.
D Integrated Pest Management.

1.1.9 When the vegetables form a hard skin over wounds to avoid additional moisture loss:

A Curing
B Shelf life
C Overhanging
D Transpiration

1.1.10 A plant that is able to avoid catching a specific disease:

A Susceptible
B Disease resistant
C Plant disease
D Mould

(10 × 1) (10)

1.2 Indicate whether the following statements are TRUE or FALSE by writing only 'True' or 'False' next to the question number (1.2.1–1.2.10) in the ANSWER BOOK.

1.2.1 Transpiration ration refers to the amount of water required by a particular crop to grow properly.

1.2.2 Flood irrigation saves water.

1.2.3 Scheduled irrigation applies water in large quantities.

1.2.4 Infiltration rate means how much water sinks into the soil.

1.2.5 A small amount of chemical mixed with a large volume of water is called high-volume spraying.

1.2.6 Caterpillars are the larval stage of moths and butterflies.

1.2.7 Methyl bromide is a fumigant that is used to control weevils.

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1.2.8 Viruses are made up of protein molecules.

1.2.9 Green beans are harvested when the pod is 12 cm long.

1.2.10 Intra-row is the space between the plants in a row.

(10 × 1) (10)

1.3 Choose a term from COLUMN B that matches a description in COLUMN A. Write only the letter (A–M) next to the question number (1.3.1–1.3.10) in the ANSWER BOOK.

| COLUMN A | | COLUMN B | |
|---|---|---|---|
| 1.3.1 | Maximum amount of water that the soil can hold | A | sprinkler irrigation |
| 1.3.2 | An example of a perennial crop | B | plant density |
| 1.3.3 | An irrigation method that simulates rainfall | C | crop rotation |
| 1.3.4 | Symbol for potassium | D | soil-field capacity |
| 1.3.5 | Number of plants in a specific area | E | irrigation |
| 1.3.6 | A farming practice that supports the optimal utilisation of resources for agricultural production | F | asparagus |
| 1.3.7 | An artificial way of supplying water to the plants when there is no rainfall | G | perennial |
| 1.3.8 | Plants that do not die off after a year | H | K |
| 1.3.9 | Pest control by using a living organism that is the natural enemy or predator of pests | I | topography |
| 1.3.10 | Shape of the land | J | thinning |
| | | K | annual |
| | | L | biological control |
| | | M | P |

(10 × 1) (10)
**[30]**

**TOTAL SECTION A: 30**

## SECTION B

## QUESTION 2

2.1 Define the following words/terms:

2.1.1 Crop rotation and monoculture

2.1.2 Evaporation and transpiration

2.1.3 Thinning and blanking

2.1.4 Annual and perennial weeds

(4 × 4) (16)

2.2 Weeds can be classified in different ways, either botanically according to species, or based on their life span, or on the basis of their habitat or leaf type.

2.2.1 List THREE classes/groups of weeds according to their leaf types. (3)

2.2.2 What are the benefits of weeds in the soil? (3)

2.2.3 Herbicides are effective, expensive and can pollute the environment, but there are other ways to eradicate weed population.

Explain FOUR horticultural ways which can be used to get rid of weeds. (4)

2.2.4 Briefly explain the TWO main groups of herbicide and how they work. (4 × 4) (4)

**[30]**

## QUESTION 3

3.1 Nematode is a microscopic worm that eats the roots of plants. It can also attack leaves and stems.

3.1.1 Name TWO types of nematodes. (2)

3.1.2 Explain the damage that will be caused by nematodes on vegetables. (2)

3.2 Hydroponics is an increasingly popular method of growing plants without using soil. Amanda, who is an emerging farmer, has decided to grow vegetables in a hydroponic system.

3.2.1 What type of irrigation system can be used in hydroponics? (2)

3.2.2 Name THREE limitations of using hydroponics. (3)

3.2.3 List FIVE advantages of using hydroponics. (5)

3.3 Study FIGURE 1 below and answer the questions that follow.

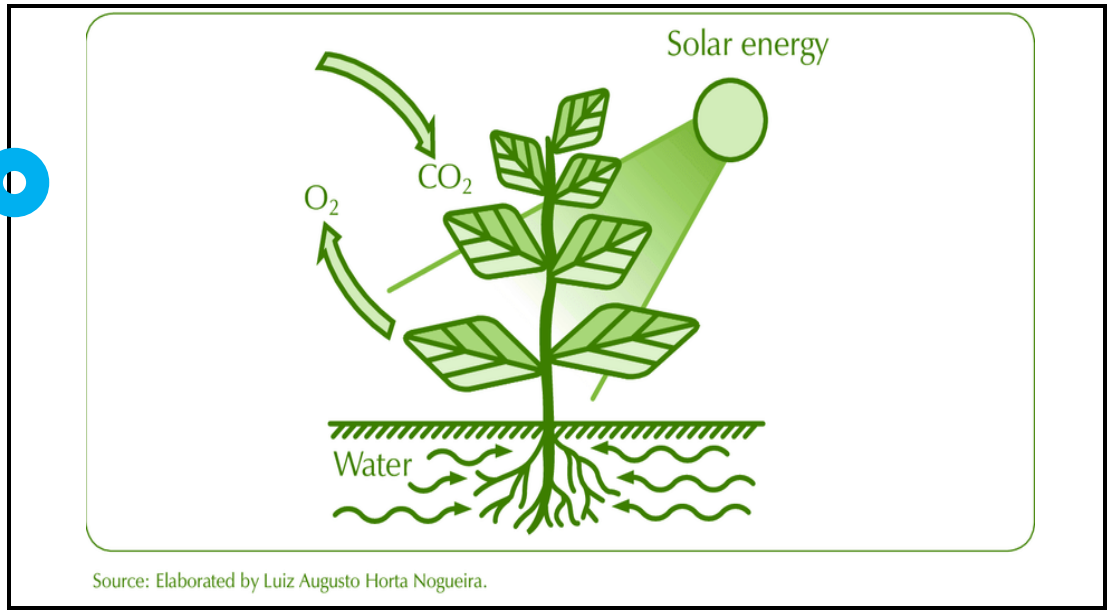



**FIGURE 1**

3.3.1 Identify the process demonstrated in FIGURE 1. (1)

3.3.2 Define the process named in QUESTION 3.3.1. (2)

3.3.3 Briefly discuss the light phase during the process mentioned in QUESTION 3.3.1. (10)

3.3.4 Briefly explain how plants can be manipulated to improve food production. (8)

**[35]**

## QUESTION 4

4.1 Study the diagram below and answer the questions.

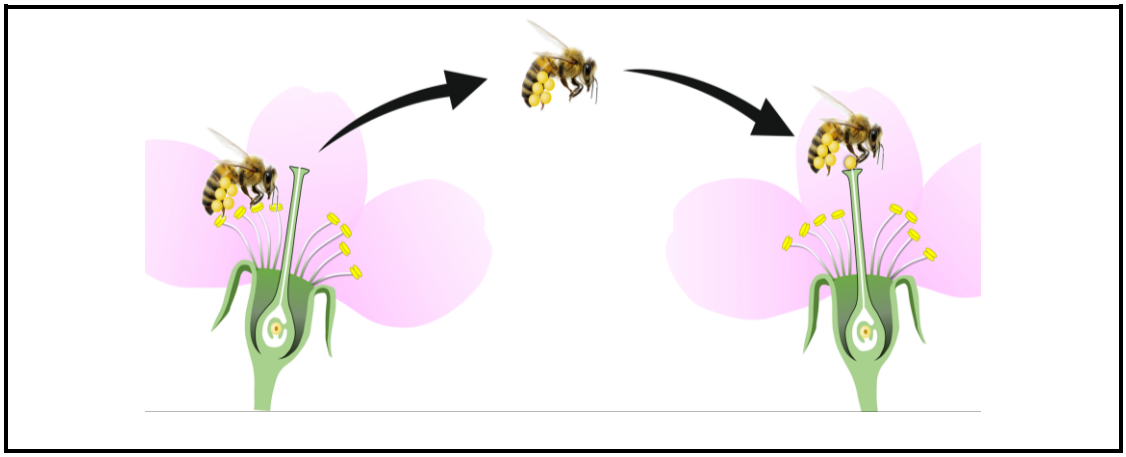


**FIGURE 2**

4.1.1 Indicate the type of pollination illustrated in FIGURE 2. (1)

4.1.2 Define the process mentioned in QUESTION 4.1.1. (2)

4.1.3 What are the drivers of pollination? (3)

4.1.4 Explain why dicotyledonous flowers are adapted to animal pollination. (6)

4.2 Plant improvement is when the vegetables are manufactured to have a better and more nutritious value and take longer to ripen.

4.2.1 Name FOUR methods of plant improvement that farmers normally practice. (4)

4.2.2 Briefly discuss the plant improvement methods mentioned in QUESTION 4.2.1 (8)

**[24]**

## QUESTION 5

5.1 Irrigation scheduling determines the correct frequency and amount of water that the soil should receive to supplement water lost during evaporation and transpiration.

5.1.1 Name TWO instruments that are used for irrigation scheduling. (2)

5.1.2 Name TWO possible problems that can occur while irrigating. (2)

5.2 In many ways, micro irrigation is better than flood irrigation.

5.2.1 State the TWO conditions that will guide one to rather use micro irrigation instead of flood irrigation. (2)

5.2.2 Name TWO components that cause micro irrigation to be so expensive. (2)

5.2.3 Tabulate the differences between a flood and micro-irrigation system. (3 × 2) (6)

5.3 Certain crops are harvested by hand while others are harvested mechanically.

5.3.1 Name FIVE factors that should guide the farmer in determining whether the vegetables are ready to be harvested or not. (5)

5.3.2 Explain the setbacks of mechanical harvesting. (2)

5.4 Discuss FOUR procedures that you will follow when preparing the soil for planting crops. (8)

5.5 Explain the harvesting method for tomatoes. (2)

**[31]**

**TOTAL SECTION B: 120**
**GRAND TOTAL: 150**

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