higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

# NATIONAL CERTIFICATE (VOCATIONAL)

## PLANT PRODUCTION
### NQF LEVEL 2

(1011012)

**16 November 2023 (Y-paper)**
**13:00–16:00**

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

095Q1N2316

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# DEPARTMENT OF HIGHER EDUCATION AND TRAINING
# REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)
PLANT PRODUCTION
NQF LEVEL 2
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 black or blue 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 An instrument to measure the soil's water amount is known as a/an …

A evaporation pan.
B tensiometer.
C evapotranspiration.
D transpiration ratio.

1.1.2 A common example of a stem tuber is …

A carrot
B garlic.
C onion.
D potato.

1.1.3 A weed that flowers and sets seeds twice a year is called a/an …

A biannual.
B annual.
C perennial.
D systemic.

1.1.4 A variety of crops produced to have certain characteristics is called a …

A cultivar.
B tissue culture.
C GMO.
D hybrid.

1.1.5 Seed treatment is done to control … diseases.

A air-borne
B soil-borne
C seed-borne
D water-borne

1.1.6 An example of a simple fruit.

A Plums
B Fig
C Pineapple
D Apple

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1.1.7 The speed at which water goes through the soil.

A plant density
B infiltration rate
C cut-off time
D percolation

1.1.8 To control pests by using an organism that is their natural enemy or predator.

A digging out
B sanitary
C biological control
D contact action

1.1.9 An organism that spreads disease from one plant or animal to another.

A irrigation
B pathogen
C vector
D pupa

1.1.10 A green pigment found in a leaf.

A chloroplast
B midrib
C chlorophyll
D guard cells

(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 Brightly coloured sepals attract animals to visit the flowers which results in the transfer of pollination.

1.2.2 Temperature affects seed germination, time of flowering, ripening of crops and yield.

1.2.3 Plant quarantine enforces the prevention of the spread of plant diseases and pests to uninfected areas.

1.2.4 Drip irrigation is a system that simulates rainfall.

1.2.5 Bruises, cuts, and insect damage affects the quality of vegetables and makes them unsuitable for the fresh market.

1.2.6 Fertile soil contains fewer nutrients.

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1.2.7 A plant's transpiration ratio is an indication of the amount of water required by a particular plant to grow properly.

1.2.8 Tomatoes are harvested when the fruits are dark red.

1.2.9 Weevils affect cabbages when they are still on the field.

1.2.10 IPM stands for Integrated Pest Management.

(10 × 1) (10)

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

| COLUMN A | | COLUMN B | |
|---|---|---|---|
| 1.3.1 | Eradicate | A | microscopic worm |
| 1.3.2 | Intercropping | B | breaking down food molecules by using the released energy |
| 1.3.3 | Carrots | C | to take over an area |
| 1.3.4 | Male gametes | D | killing pests by suffocating them |
| 1.3.5 | Tissue | E | when a plant or animal changes its shape or body structure |
| 1.3.6 | Nematode | F | sex cells |
| 1.3.7 | Metamorphosis | G | growing two or more crops simultaneously on the same plot |
| 1.3.8 | Fumigation | H | group of cells that perform a similar function |
| 1.3.9 | Invasive | I | to get rid of |
| 1.3.10 | Respiration | J | are regarded as the root crops |
| | | K | grow downwards with tap root attached |
| | | L | produces angiosperm |

(10 × 1) (10)

1.4 Complete the following sentences by choosing the word or words from the list below. Write only the answer next to the question number (1.4.1–1.4.10) in the ANSWER BOOK.

| hydroponics; disease resistant; repellent; cultures; fungicides; fumigate; money maker; soil field capacity; manual; nutrients; nitrogen; secateurs |
|---|

1.4.1 A … smells so bad that keeps insects away.

1.4.2 A crop production system where plants are not grown in soil is called …

1.4.3 Choosing … cultivars is the best way to prevent your plants from being attacked by diseases.

1.4.4 Different types of growth mediums are called ….

1.4.5 … destroys fungus in the soil.

1.4.6 … is the maximum amount of water that the soil can hold.

1.4.7 Harvesting of plants using hands is called ...

1.4.8 … are food that helps the plant to grow.

1.4.9 Legumes are rich in …

1.4.10 Strong scissors used for cutting plant stems are called …

(10 × 1) (10)
**[40]**

**TOTAL SECTION A: 40**

## SECTION B

## QUESTION 2

2.1 Study FIGURE 1 below and answer the questions that follow:

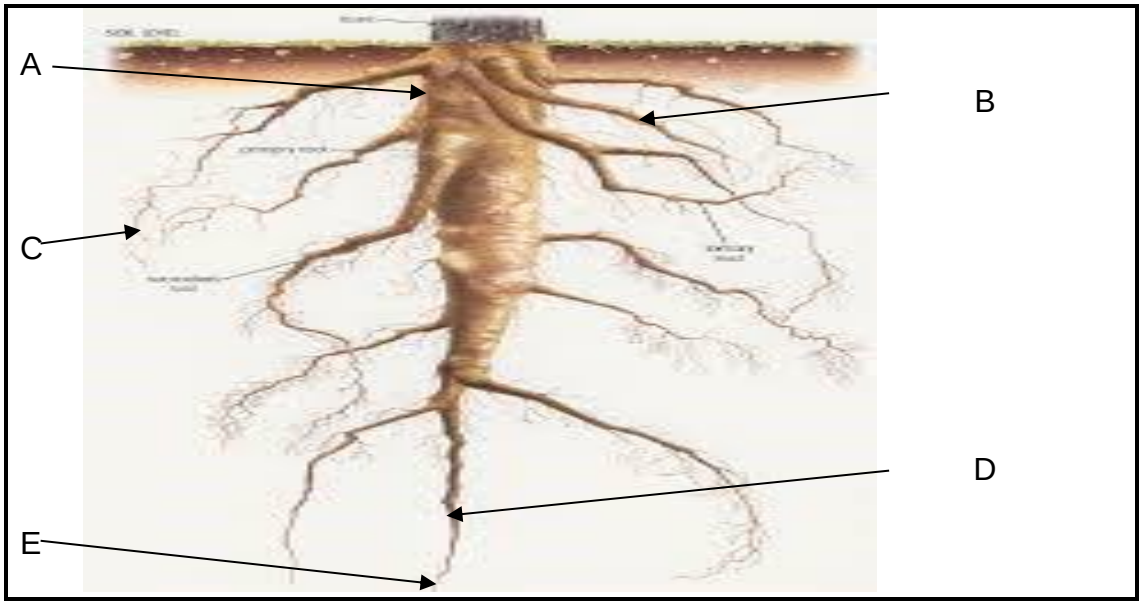



**FIGURE 1**

2.1.1 State whether the root is an example of a fibrous or tap root system. (1)

2.1.2 Label the parts A–E in FIGURE 1. (5)

2.1.3 What role is played by a root cap in plant roots? (1)

2.1.4 Explain the functions of a root. (4 × 1) (4)

2.2 Differentiate between *angiosperm* and *gymnosperm plants*. (2 × 2) (4)

2.3 Natural crop plants produce food for their growth through the process of photosynthesis.

2.3.1 Define the term/word *photosynthesis*. (2)

2.3.2 Briefly discuss the light phase of photosynthesis. (5 × 2) (10)

2.3.3 Name the molecules produced during the light and dark phases? (2)

2.3.4 Explain briefly the FOUR ways that can be used to manipulate the plants to increase the production of food. (4 × 2) (8)

2.3.5 Indicate THREE ways to differentiate between crops and natural vegetation. (3)

**[40]**

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## QUESTION 3

3.1 Indicate the safety measures that should be implemented when using chemicals. (5 × 1) (5)

3.2 State FIVE agents responsible for spreading diseases on plants. (5)

3.3 The damage caused by weeds to crop yields is sometimes underestimated.

3.3.1 Define the term *weed*. (2)

3.3.2 Name FOUR negative results of weeds on plants when they are not removed. (4)

3.3.3 List THREE types of herbicides. (3)

3.3.4 Explain how each herbicide mentioned in QUESTION 3.3.3 work. (3)

3.3.5 Differentiate between *annual* and *perennial weeds*. (2 × 2) (4)

3.4 Name TWO types of nematodes. (2)

3.5 Explain the damage that is caused by nematodes on plant growth. (2)

3.6 Soil samples taken before planting crops is providing important information about the status of the soil.

3.6.1 State FIVE advantages of taking soil samples for analysis with regard to plant nutrients. (5)

3.6.2 Explain the role of nitrogen in plants. (3 × 1) (3)

3.6.3 Define the word/term *macro-nutrients*. (2)

**[40]**

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## QUESTION 4

4.1 Integrated Pest Management is a system of controlling pests and diseases without using chemicals.

4.1.1 Briefly explain FOUR methods of controlling pests and diseases through the IPM approach. (4 × 2) (8)

4.1.2 Give ONE example of an insect/animal that can be used to control weeds. (1)

4.2 Harvesting of different vegetables is determined by the kind of vegetable. Each kind has its own optimum stage of readiness.

Explain the harvesting method for the following crops:

4.2.1 Tomatoes

4.2.2 Cabbages

4.2.3 Carrots

4.2.4 Onions

(4 × 2) (8)

4.3 Name FIVE properties of Carbon disulphide as a commonly used fumigant for grains. (5)

4.4. 4.4.1 Name TWO ways in which weevil infestation can be limited. (2)

4.4.2 Briefly explain the TWO methods named in 4.4.1 (4)

4.5 Name TWO characteristics of good seeds. (2)
**[30]**

**TOTAL SECTION B: 110**
**GRAND TOTAL: 150**

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