



# higher education & training

Department:  
Higher Education and Training  
**REPUBLIC OF SOUTH AFRICA**

## **NATIONAL CERTIFICATE (VOCATIONAL)**

### **PLANT PRODUCTION NQF LEVEL 2**

(1011012)

**10 December 2020 (X-paper)  
09:00–12:00**

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

519Q1N2010

<p><b>TIME: 3 HOURS</b> <b>MARKS: 150</b></p>
---

---

## **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 question on a new page.
  5. Use only a black or blue pen.
  6. Write neatly and legibly.
-

**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 A nonflowering plant containing chlorophyll but lacking true stems, roots, leaves and vascular tissue:

- A Yeast
- B Fungus
- C Alga
- D Moss



1.1.2 The ... is the outer layer of a leaf.

- A stoma
- B guard cell
- C palisade
- D epidermis

1.1.3 Loss of water through the stomata of leaves:

- A Evaporation
- B Evapotranspiration
- C Transpiration
- D Respiration

1.1.4 ... is another name for leafstalk.

- A Petiole
- B Midrib
- C Stomata
- D Xylem



1.1.5 A special chemical that accelerates the rate of the reaction during photosynthesis:


- A Autotrophic
- B Enzyme
- C Chemical reaction
- D Chlorophyll

1.1.6 A chemical used to control weeds:

- A Pesticide
- B Fungicide
- C Insecticide
- D Herbicide



1.1.7 Unwanted plants:

- A Weeds 
- B Crop rotation
- C Field capacity
- D Densely planting


1.1.8 Legumes are rich in ...

- A potassium.
- B nitrogen.
- C phosphorus.
- D nitrates.

1.1.9 The correct spacing for tomatoes is ... between rows and ... between plants.



- A 60 cm; 30 cm
- B 1 m; 60 cm
- C 80 cm; 50 cm
- D 30 cm; 10 cm

1.1.10 Planting of two or more crops in one plot:

- A Crop rotation 
- B Intercropping
- C Monoculture
- D Strip cropping

(10 × 1) (10)

- 1.2 Choose a term from COLUMN B that matches a description in COLUMN A. Write only the letter (A–L) next to the question number (1.2.1–1.2.10) in the ANSWER BOOK.

COLUMN A		COLUMN B	
1.2.1	Fixation of carbon dioxide to high-energy carbohydrates	A	fertigation
1.2.2	Giving a vine the best shape	B	stigma
1.2.3	Number of plants per area	C	metabolism disease
1.2.4	Filling of gaps in a planted area	D	pruning 
1.2.5	Device used to estimate the amount of water loss due to transpiration	E	dark phase of photosynthesis
1.2.6	Controls seed-borne diseases	F	plant density
1.2.7	Female part of a flower	G	fumigation
1.2.8	Pale yellow-green leaves 	H	blanking
1.2.9	Irrigation system that conserves 70% of water	I	micro-irrigation
1.2.10	Application of a pesticide or fertiliser through an irrigation system	J	evaporation pan
		K	seed dusting
		L	sprinkler irrigation

(10 × 1)

(10)

1.3 Give ONE term for each of the following descriptions by writing it next to the question number (1.3.1–1.3.10) in the ANSWER BOOK.

1.3.1 Green pigment in leaves

1.3.2 Process whereby a plant is modified by transferring a gene from another plant



1.3.3 Sweet and sticky juice inside a flower

1.3.4 Process where the male gamete combines with the ovum to form a zygote

1.3.5 Distribution of fertiliser over the entire planted field

1.3.6 Powdery substance made from crushed animal bones

1.3.7 Loss of water through soil

1.3.8 Irrigation method used to determine how much and at what time to irrigate crops



1.3.9 Sticky substance left on plants by some insects

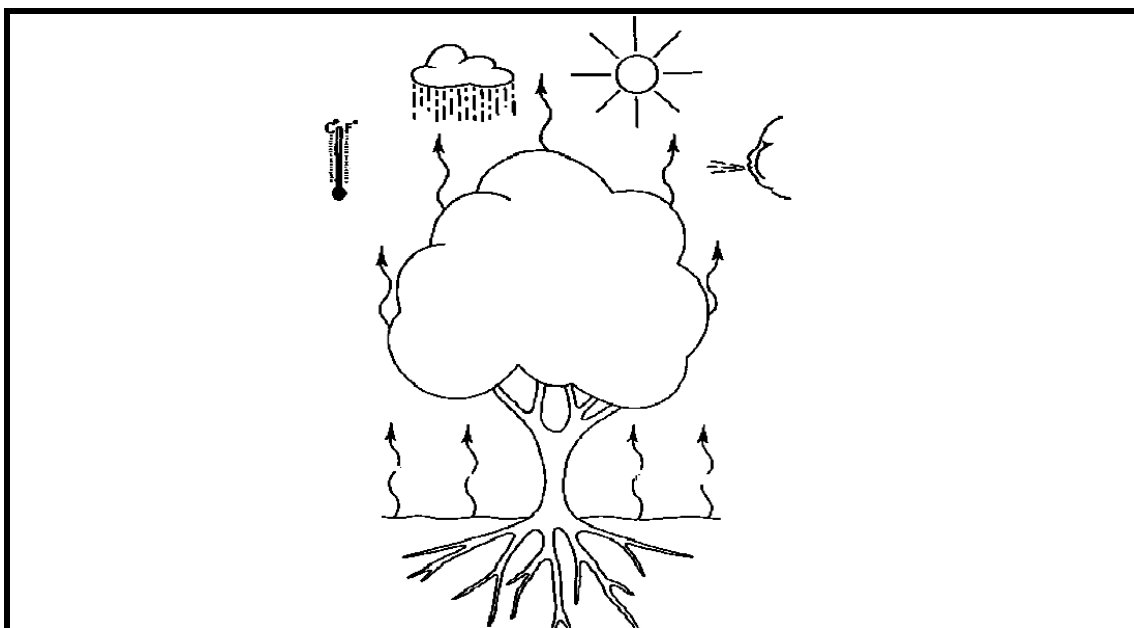
1.3.10 Strong scissors used for cutting plant stems

(10 × 1)

(10)  
**[30]**


**QUESTION 2**

2.1



2.1.1 Identify FIVE components required for photosynthesis. (5)

2.1.2 Briefly explain the light phase of photosynthesis. (5)

2.1.3 List FOUR ways in which plants store extra food.  (4)

2.2 2.2.1 Which pest and disease control method is safe and not detrimental to the environment? (1)

2.2.2 Give THREE pest and disease control strategies that a farmer can apply without using chemicals. (3)


2.2.3 Name THREE types of pesticides. (3)

2.2.4 List THREE groups of fungicides. (3)


2.2.5 Explain THREE principles of integrated pest management in crop production. (3 × 2) (6)

**[30]**

**QUESTION 3**

- |     |       |   |   |             |
|-----|-------|---|---|-------------|
| 3.1 | 3.1.1 | Differentiate between <i>angiosperms</i> and <i>gymnosperms</i> .                             | (2 + 2)   | (4)         |
|     | 3.1.2 | List THREE adaptations of monocotyledonous flowers to wind pollination.                       |  | (3)         |
|     | 3.1.3 | Define the term <i>pollination</i> .  |   | (2)         |
|     | 3.1.4 | Differentiate between <i>wind-pollinated</i> and <i>animal-pollinated</i> flowers.            | (2 + 2)   | (4)         |
| 3.2 | 3.2.1 | Define the term <i>nutrients</i> as applied to crop production.                               |   | (2)         |
|     | 3.2.2 | Give FIVE advantages of taking soil samples prior to planting with regard to plant nutrients. |   | (5)         |
|     | 3.2.3 | List FOUR soil properties of bulb crops.  |   | (4)         |
|     | 3.2.4 | Give SIX advantages of growing vegetables in a greenhouse.                                    |   | (6)         |
|     |       |   |   | <b>[30]</b> |

**QUESTION 4**

- |     |       |  |   |             |
|-----|-------|--|---|-------------|
| 4.1 | 4.1.1 | Explain the concept of <i>transplanting</i> as applied in crop production. |   | (2)         |
|     | 4.1.2 | Give FIVE advantages enjoyed by farmers who use seedlings.                 |   | (5)         |
|     | 4.1.3 | Give FIVE advantages of a good seed in crop production.                    |   | (5)         |
|     | 4.1.4 | List FIVE factors to consider when planning for crop production.           |   | (5)         |
| 4.2 | 4.2.1 | Define the term <i>weed</i> .  |  | (2)         |
|     | 4.2.2 | Explain FIVE detrimental effects of weeds on crops.                        |   | (5)         |
|     | 4.2.3 | Distinguish between <i>selective</i> and <i>nonselective</i> herbicides.   | (2 + 2)   | (4)         |
|     | 4.2.4 | Give an example of each type of herbicide mentioned in QUESTION 4.2.3.     |   | (2)         |
|     |       |  |   | <b>[30]</b> |



**QUESTION 5**

- 5.1      5.1.1      Explain the concept of *micro-irrigation* as it relates to agriculture.      (2)
- 5.1.2      Give TWO examples of micro-irrigation systems.      (2)
- 5.1.3      State THREE setbacks of micro-irrigation systems.      (3)
- 5.1.4      List FIVE factors to consider when choosing the type of irrigation method.      (5)



5.2

Month	Crop factor (maize)	Average monthly Class A pan evaporation (mm/month)	Monthly (mm/month)
January	0,60	365	8
May	0,47	90	21
June	0,19	57	61
August	0,21	33	18
December	0,56	172	14

- 5.2.1      Define the term *irrigation scheduling*.      (2)
- 5.2.2      Name TWO devices used for irrigation scheduling.      (2)
- 5.2.3      Calculate the evapotranspiration rate in May.      (3)
- 5.2.4      Calculate the irrigation requirement for the maize crop in May.      (2)
- 5.3      5.3.1      Explain the relationship between *photosynthesis*, *transpiration* and *respiration* in plants.      (3 × 2)      (6)
- 5.3.2      List THREE effects of poor pollination in fruit setting.      (3)

**[30]****TOTAL:      150**