higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

# NATIONAL CERTIFICATE (VOCATIONAL)

## PLANT PRODUCTION
## NQF LEVEL 3

(1011013)

**13 November 2018 (X-Paper)**
**09:00 – 12:00**

**This question paper consists of 8 pages.**

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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. Write neatly and legibly.

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## SECTION A

## QUESTION 1

1.1 Choose a/an word/item from COLUMN B that matches a description in COLUMN A. Write only the letter (A–O) next to the question number (1.1.1–1.1.10) in the ANSWER BOOK.

| | COLUMN A | | COLUMN B |
|---|---|---|---|
| 1.1.1 | Soil with a high pH value | A | pesticides |
| 1.1.2 | Crops grown for animal grazing | B | hard pan |
| 1.1.3 | Shoots that grow into new plants | C | syphons |
| 1.1.4 | Fertiliser derived from organic material | D | alkaline |
| | | E | forage |
| 1.1.5 | Chemical design to kill weeds | F | organic fertiliser |
| 1.1.6 | Insertion of a scion of a tree into the growing trunk | G | acidic |
| 1.1.7 | Applying fertiliser after the crop has emerged | H | budding |
| | | I | broadcasting |
| 1.1.8 | Growing crops such as vegetables between rows of trees | J | herbicides |
| 1.1.9 | A hard layer of soil that is caused by pressure exerted by machinery used during ploughing | K | grafting |
| | | L | spile pipes |
| 1.1.10 | A technique of reproduction using a shoot between nodes | M | alley-cropping |
| | | N | suckers |
| | | O | top dressing |

(10 × 1) (10)

1.2 Fill in the missing word/term for each of the following sentences/statements. Write only the word/term next to the question number (1.2.1–1.2.10) in the ANSWER BOOK.

1.2.1 ... refers to the spaces between the soil particles.

1.2.2 The type of agro-forestry that includes plants and forestry is …

1.2.3 … is applied to neutralise or balance pH in the soil.

1.2.4 … is a mixture of nutrients added to the soil to improve plant growth and yield.

1.2.5 A tall cylindrical structure used for storing harvested crops is called ...

1.2.6 … is the layer of tissue between the bark and the wood which forms the new cells.

1.2.7 A nutrient imbalance in plants causes a … disorder.

1.2.8 The … method allows excess water to flow out of the field furrow where it is collected in a tall-water ditch.

1.2.9 A … is an open low-lying area that collects water.

1.2.10 The method of applying fertilisers so that the leaves can absorb the nutrients is called … (10 × 1) (10)

1.3 Indicate whether the following statements are TRUE or FALSE. Choose the answer and write 'true' or 'false' next to the question number (1.3.1–1.3.5) in the ANSWER BOOK.

1.3.1 The best time to take a leaf sample is from the beginning of January to the end of March.

1.3.2 Side dressing is a term used when fertiliser is applied after the crop has emerged.

1.3.3 Most of the plant parts consist of 85% to 98% water.

1.3.4 Fungi are referred to as a pathogen and NOT parasites because the mycelium grows into cells of the plant to extract nutrients.

1.3.5 Systemic describes a disease or condition that affects only one part of a plant or organism.

(5 × 1) (5)

1.4 Define the following terms:

1.4.1 Wilting

1.4.2 Mulching

1.4.3 Humus

1.4.4 Leaching

1.4.5 Cultivar

(5 × 2) (10)

1.5 State FIVE factors that play a role when planning a crop rotation programme. (5)

1.6 List FIVE categories of organic fertilisers and give ONE example of each.

(5 × 2) (10)

**[50]**

**TOTAL SECTION A: 50**

**SECTION B**

**QUESTION 2**

2.1 2.1.1 Explain the importance of harrowing and discing during soil preparation. (6)

2.1.2 Name the FIVE factors that influence the yield potential of crops. (5)

2.1.3 Describe the effects of bare cultivation on the following soil factors:

(a) Soil structure

(b) Nutrient status

(c) Water infiltration

(d) Compaction

(e) Aeration

(5 × 2) (10)

2.1.4 Why do farmers use a *cover crop*? (2)

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2.1.5 Suggest a winter cover crop that can be used for the type of soil with the following status in an agro-forestry farming business.

(a) Alkaline soil

(b) Acidic soil

(c) Neutral soil

(3 × 1) (3)

2.2 When preparing fields for planting fertilisers are applied with the aim of improving the soil fertility status and yield.

2.2.1 When should fertilisers be applied? (1)

2.2.2 What is the difference between organic and inorganic fertilisers? Tabulate your answer. (8)

2.2.3 Briefly explain the methods that farmers can use to apply fertilisers on a piece of land. (4)

2.3 Row spacing is an important factor to be considered when reproducing agronomic crops, fruit trees and agro-forests.

2.3.1 Distinguish between intra row spacing and inter row spacing. (2)

2.3.2 Briefly explain what the effects of incorrect plant spacing will have on agro-forests. (5)

2.3.3 Name FOUR good qualities of a rootstock that is suitable for agronomic crops, fruit trees and agro-forests. (4)

**[50]**

**QUESTION 3**

3.1 Diseases and pests are the major factor that affects yield and economically viability of crop production.

3.1.1 Which part or parts of the plant is damaged by the following pests?

(a) Soil pests

(b) Stem borers

(c) Leaf suckers

(3 × 1) (3)

3.1.2 Give ONE example of each of the categories of pathogens named in QUESTION 3.1.1. (3)

3.1.3 Name the THREE ways that can be applied to control plant pests and diseases. (3)

3.1.4 What are the advantages and disadvantages of the THREE control measures for plant pests and diseases named in QUESTION 3.1.3? (6)

3.1.5 Describe how crop rotation will play a role in the control of diseases and pests during crop production. (2)

3.2 Water is a very scarce resource in South Africa therefore it must be used with due consideration.

3.2.1 Suggest the type of irrigation system that will be best suitable and effective for fruit trees and vines. (1)

3.2.2 Justify your answer for QUESTION 3.2.1. (4)

3.2.3 Name TWO major problems that may arise because of irrigation. (2)

3.2.4 Why is mulching important on irrigated fruit tree and vines? (5)

3.3 Agro-forestry is about the interaction between different living and non-living organisms in a farming system. Study FIGURE 1 and 2 below and answer the questions.



**FIGURE 1**

Source: Internet

3.3.1 Identify the living and non-living components of an agro-forestry system. (5)

3.3.2 How do each of the living elements listed in QUESTION 3.3.1 benefit from each other? (6)

3.3.3 What are the problems associated with agro-forestry systems? (3)

3.2.4 How can competition between trees and crops be minimised in agro-forestry? (1)

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3.4 3.4.1 What type of agroforestry is illustrated in FIGURE 2? (1)



**FIGURE 2**

Source: Internet

3.4.2 Describe the type of agroforestry illustrated above. (1)

3.4.3 State FOUR reasons why this system may not be favoured by farmers. (4 × 1) (4)

**[50]**

**TOTAL SECTION B: 100**
**GRAND TOTAL: 150**

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