higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

PLANT PRODUCTION
NQF LEVEL 3

(1011013)

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09:00–12:00

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DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)
PLANT PRODUCTION
NQF LEVEL 3
TIME: 3 HOURS
MARKS: 150

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. Use only a black or blue pen.
5. Write neatly and legibly.

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QUESTION 1

1.1 Complete the following sentences by writing only the missing word or words next to the question number (1.1.1–1.1.10) in the ANSWER BOOK.

1.1.1 … are plants that grow flowers and produce or bear seeds in fruits.

1.1.2 The type of irrigation system where water is distributed through a predetermined pattern of pipes at low pressure is called …

1.1.3 … consists of substances that are NOT derived from living things, such as particles formed when rocks break down into smaller pieces.

1.1.4 … is the study of the way plants function, grow, reproduce and protect themselves.

1.1.5 … is the loss of water through the stomata in the leaves of a plant.

1.1.6 … is the type of soil that increases loss of water during irrigation.

1.1.7 … is a plant propagation technique that inserts a shoot of a plant into a rootstock.

1.1.8 … is the vertical framework to which the shoots or branches of a tree or vine are attached to guide their growth in a desired direction.

1.1.9 The type of planting or crop production without ploughing and disturbing the soil ecosystem is called …

1.1.10 A … is a tall, cylindrical structure for storing a harvested crop.

(10 × 1) (10)

1.2 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 (1.2.1–1.2.10) in the ANSWER BOOK.

1.2.1 The type of fertiliser and its application are determined by many factors. Which factor is NOT important when applying fertilisers?

A Soil type
B Crop type
C Rainfall pattern
D Crop height

1.2.2 The term used when a fertiliser is applied after the crop has emerged:

A broadcasting
B band placing
C topdressing
D foliar application

1.2.3 Which of the following fertilisers DOES NOT contain nitrogen?

A Superphosphate
B Limestone ammonium nitrate
C Urea
D Ammonium sulphate

1.2.4 An organism that lives off dead organic matter is known as a …

A saprophyte
B microbe
C nematode
D parasite

1.2.5 Pruning shears and knives should be disinfected with … formalin solution.

A 43%
B 5%
C 65%
D 90%

1.2.6 Yellow or brown patches on the lower surface of leaves are caused by …

A damping-off
B downy mildew
C rust
D mosaic

1.2.7 Brown patches under the leaves that will eventually cause all leaves to die:

A Blight
B Damping-off
C Powdery mildew
D Root rot

1.2.8 A plantation of fruit trees used for the cultivation of fruit is a/an …

A field crop
B creeper
C tree market
D orchard

1.2.9 A young shoot of a plant that is used for grafting:

A Rootstock
B Budding
C Scion
D Grafting

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1.2.10 The method of drilling a hole into the soil to assess the soil quality:

A Soil analysis
B Soil management
C Soil interpretation
D Soil sampling

(10 × 1) (10)

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

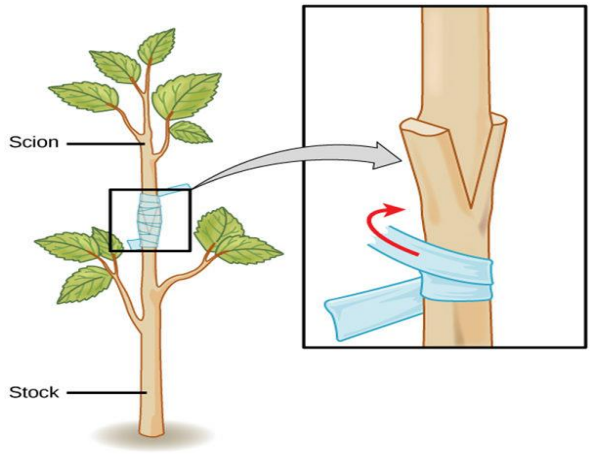
COLUMN A		COLUMN B	
1.3.1	Crop remains after harvesting	A	point-rows
1.3.2	The crop fixes the nitrogen content in the soil	B	cabbages
1.3.3	The application of a nutrient solution directly onto the leaves of a plant	C	reproduction
1.3.4	A technique practised during the dormant stage, especially in winter	D	cover crop
1.3.5	Grown for the purpose of keeping the ground from being bare	E	asexual reproduction
1.3.6	Part of a plant where leaves develop after grafting	F	foliar application
1.3.7	A process of producing one of the same	G	legumes
1.3.8	Using the vegetative part of the plant to reproduce	H	mulch
1.3.9	A method of propagating a plant using a seed	I	sexual reproduction
1.3.10	Rows which meet in a sharp corner	J	rootstock
		K	grafting
		L	residue
		M	inter-rows
		N	band application

(10 × 1) (10)

[30]

QUESTION 2

2.1 Study the figure below and answer the questions that follow:



2.1.1 Identify the propagation method illustrated in the figure above. (1)

2.1.2 Define the method of propagation named in QUESTION 2.1.1. (1)

2.1.3 Differentiate between a rootstock and a scion. (2)

2.1.4 State FOUR factors considered by farmers when choosing a rootstock for grafting. (4)

2.1.5 Briefly describe the procedures involved in conducting the method of propagation named in QUESTION 2.1.1. (4)

2.2 'Agroforestry systems are already partly practised by many farmers in South Africa.'

2.2.1 Define the term *agroforestry*. (2)

2.2.2 Name FOUR problems associated with agroforestry. (4)

2.2.3 Suggest how competition could be minimised in agroforestry. (1)

2.3 Annual agronomic crop production takes place through the planting or sowing of seeds. The growing medium for sowing seeds is very important because it determines the success of the production process.

2.3.1 Why must the germination percentage and quality of the seed be known before sowing or planting? (2)

2.3.2 State FOUR qualities or characteristics of the growing medium that must be met for successful sow seeding. (4)

2.4 Identify any aspects or factors that a farmer must consider when constructing seedbeds to produce seedlings. (5)

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QUESTION 3

3.1 Pests and diseases affect the growth of plants and lead to low yield.

3.1.1 Name THREE methods of controlling pests and diseases. (3)

3.1.2 Briefly explain how each of the methods named in QUESTION 3.1.1 can be used to control pests and diseases. (6)

3.1.3 State the damage that each of the following categories of pest usually causes to planted crops:

(a) Leaf eaters

(b) Stem borers

(c) Soil pests

(6)

3.1.4 Match each insect with the type of damage that each causes on fruit trees by choosing the type of damage from the list below.
For example: (a) Armyworms destroy the stem.

Type of pest:
(a) Bollworms
(b) Fruit flies
(c) Nematodes
(d) Armyworms

Type of damage:
- Chew leaves
- Destroy roots and promote root rot
- Create tunnels to the centre of the fruit, causing it to decay
- Feed on leaves and buds, thus reducing leaf area and growing points of fruits (4)

3.2 The use of chemicals by farmers has a negative impact on the farm and can lead to poor soil structure. State SIX precautions that must be considered when handling chemicals before spraying. (6)

3.3 Define each of the following methods of applying pesticides.

3.3.1 High-volume spraying

3.3.2 Low-volume spraying

3.3.3 Ultra-low volumes

3.3.4 Aerial spraying

(4 × 2) (8)

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3.4 Scouting is a process of routinely checking crops for pests and diseases to inform management decisions.

3.4.1 List FOUR pieces of equipment or tools that may be needed when scouting for insects. (4)

3.4.2 Briefly explain why each of the tools named in QUESTION 3.4.1 above is important. (4)

3.4.3 Name the type of data that must be recorded on the record sheet when scouting. (4)

3.5 Identify any other aspects or factors other than checking crops for pests and diseases that the scout needs to consider. Name FIVE. (5)
[50]

QUESTION 4

4.1 Some non-commercial farmers grow the same crop year after year on the same piece of land.

4.1.1 What type of farming is described in the above statement? (2)

4.1.2 Identify an alternative type of farming to the one named in QUESTION 4.1.1. (2)

4.1.3 Explain the effect of successively planting the same crop on the same land. (5)

4.1.4 Briefly name FIVE factors that must be considered when a farmer plans for the alternative farming method named in QUESTION 4.1.2. (5)

4.1.5 List FIVE groups of crops that a farmer can use for the type of alternative farming named in QUESTION 4.1.2. (5)

4.2 Crops must be harvested at a state of readiness, which will ensure that it reaches the consumer in good condition.

4.2.1 List FOUR post-harvest treatment practices that are important for vegetables or fruits once they have been harvested. (4)

4.2.2 What criteria are used to measure crop maturity? List FOUR. (4)

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4.3 What effects do the following treatments have on fruits or vegetables after a harvest?

(a) Plant hormone

(b) Dipping

(c) Fungicide

(3 × 2) (6)

4.4 State FOUR factors that a farmer should consider before harvesting crops. (4)

4.5 Why do farmers wrap and cool fruits after a harvest? (1)

4.6 Name TWO methods that can be used to dry grain crops before storage. (2)

[40]

TOTAL: 150

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