higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

PLANT PRODUCTION
NQF LEVEL 3

13 November 2024

This marking guideline consists of 7 pages.

Copyright reserved

QUESTION 1

1.1	1.1.1	Angiosperm		
	1.1.2	Micro-irrigation		
	1.1.3	Inorganic material		
	1.1.4	Plant physiology		
	1.1.5	Transpiration		
	1.1.6	Sandy soil		
	1.1.7	Grafting		
	1.1.8	Trellis		
	1.1.9	Zero tillage		
	1.1.10	Silo		
			(10 × 1)	(10)

1.2	1.2.1	D		
	1.2.2	C		
	1.2.3	A		
	1.2.4	A		
	1.2.5	D		
	1.2.6	C		
	1.2.7	A		
	1.2.8	D		
	1.2.9	C		
	1.2.10	D		
			(10 × 1)	(10)

1.3	1.3.1	L		
	1.3.2	G		
	1.3.3	F		
	1.3.4	K		
	1.3.5	D		
	1.3.6	N		
	1.3.7	C		
	1.3.8	E		
	1.3.9	I		
	1.3.10	A		
			(10 × 1)	(10)
				[30]

Copyright reserved

QUESTION 2

2.1 2.1.1 Grafting (1)

2.1.2 The process involves inserting part of a plant into another or joining two plants together. (1)

2.1.3 Rootstock – underground part of a plant from which new above-ground growth can be produced✓
Scion – the shoot of the plant that will create a new plant with better qualities✓ (2)

2.1.4
- It must suit local climatic conditions.
- It should be well adapted to the climate and soil of the area.
- It should be resistant to diseases and pests common in the area.
- It should have qualities such as frost resistance that may be required in the area.
- It should not have excessive branching and should attain graftable size early. (Any 4 × 1)

(4)

2.1.5
- The rootstock and scion are slipped together so that the tongues lock.
- The scion is inserted into the cut made in the rootstock in such a way that the cambium layers make contact.
- The joint is securely tied with tape to protect the scion from drying out.
- Earth the soil up around the rootstock to cover the wound.
- Water the new plant. (4)

2.2 2.2.1 Agroforestry is an integration of trees, crops and/or animals in the farming system so that land can simultaneously be used for more than one purpose to achieve both environmental and financial benefit. (2)

2.2.2
- Trees may compete with crops for water and nutrients.
- Trees will become more competitive for water during drought conditions, which could suppress the growth of crops.
- Trees may be viewed as permanent in the farming system.
- Crop yield may be reduced if the system is not well planned and maintained.
- Trees that use water during the period between successive crops will reduce stored water in the soil for the follow-up crop.
- Market demand for tree products may be different from the demand for crops or livestock; thus, one product may be selling well, while the other could sell at a loss. (Any 4 × 1) (4)

2.2.3 Competition between trees and crops can be minimised by planting short trees, or crop spacing. (1)

Copyright reserved

2.3 2.3.1 To increase output and profitability (2)

2.3.2
- The growing medium must suit the seed and must have rooting qualities.
- The growing medium should be free of weed seeds, harmful insects and pathogens.
- The growing medium must always be kept moist.
- The medium must be suitable for various seed species. (4)

2.4
- A new seedbed should be prepared a few months before planting time and kept free of weeds.
- Soil must be sandy with less than 15% clay.
- The seedbed terrain must be levelled.
- Waterways and contours must be made to divert stormwater from the seedbeds.
- The beds must be raised above the ground surface.
- The seedbeds should preferably be 1 m wide.
- Must be completely level.
- Must be manageable.
- Fertilisers should be added.
- Must be watered for two weeks to encourage weed growth.
- Seeds must be sown in rows.
- Watered daily for 60 days.
- After the emergence of plants, all weeding must be done. (Any 5 × 1) (5)

[30]

QUESTION 3

3.1 3.1.1
- Chemical or artificial approach
- Cultural or biological approach
- Physical or mechanical method (3)

3.1.2 Chemical control – The use of chemical substances by spraying, using a knack sprayer or machinery

Biological control – The use of natural living organisms, such as predators that attack pests or companion plants that poison or discourage pests and prevent diseases

Physical – removing by hand or cutting back parts of a plant to prevent pest increases or the spread of diseases (3 × 2) (6)

3.1.3 (a) Leaf eaters: Chewing insects on the surface of the leaves

(b) Stem borers: Small chewing insects that live in the stems of plants

(c) Soil pests: Insects that live and feed in the soil and that interfere with root growth

(3 × 2) (6)

Copyright reserved

3.1.4
- Armyworms - chew leaves✓
- Nematodes - destroy roots and promote root rot✓
- Fruit flies - create tunnels to the centre of the fruit, causing it to decay✓
- Bollworms - feed on leaves and buds, thus reducing leaf area and growing points of fruits (4)

3.2
- Use only when there is no other option.
- Use strictly according to the prescription on the container.
- Wear protective clothes.
- Spray only on windless days.
- Don't eat or drink while applying insecticides.
- Don't allow contact with skin.
- Keep away from children and animals. (Any 6 × 1) (6)

3.3 3.3.1 High-volume spraying ─ this involves applying a spray mixture with a low✓ concentration of chemicals at high✓ volumes per unit area.

3.3.2 Low-volume spraying ─ the spray mixture with a high✓ concentration of chemicals is applied at low✓ volumes per unit area.

3.3.3 Ultra-low volumes ─ spray mixtures are sprayed at extremely high✓ concentrations but in small✓ volumes per hectare.

3.3.4 Aerial spraying ─ spray mixtures are sprayed from above✓ or an aeroplane at a high✓ speed

(4 × 2) (8)

3.4 3.4.1
- Record sheet
- Pen
- Magnifying glass
- Sharp pocketknife
- Net
- Protective clothing (Any 4 × 1) (4)

3.4.2
- Record sheet – to record all data, information or statistics for further processing
- Pen – to capture information on the record sheet
- Magnifying glass ─ to be able to correctly and accurately identify the pest
- Sharp pocketknife – to carve out parts of the plant for further investigation and research
- Protective clothing ─ (nose muff, gloves, goggles – must be protected against infection)
- Net – to easily catch flying insects for analysis and investigation (Any 4 × 1) (4)

Copyright reserved

3.4.3
- Name of the orchard/plot
- Scout's name
- Pest's name
- Date of inspection
- Comment
- Last date of inspection
- Cause of disease
- Recommended spray (Any 4 × 1) (4)

3.5
- Irrigation issues
- Nutrient issues
- Stage of plant growth
- Height of plant
- Effectiveness of control and preventative measures
- Crop damage (Any 5 × 1) (5)

[50]

QUESTION 4

4.1 4.1.1 Monoculture (2)

4.1.2 Crop rotation (2)

4.1.3
- The nutrients in the soil may be used up.
- A hard pan may form at the root level, preventing proper drainage.
- Disease or epidemics may break out.
- The soil structure may break down as the humus is used up.
- Weeds grow well among certain crops and if the same crop is grown each year, these weeds will increase. (5)

4.1.4
- The climate of an area and the microclimate of the field
- The physical qualities of the soil
- Supply of and demand for crops and the price at which they can be sold
- Distance from the market
- The availability of labour and the amount of labour required to grow various crops
- The farmers' training and management skills
- The type of infrastructure of the area (Any 5 × 1) (5)

4.1.5
- Grass
- Fodder
- Oil
- Fibre
- Bulb
- Tuber
- Legume
- Fruit-bearing trees (Any 5 × 1) (5)

Copyright reserved

4.2 4.2.1 washing, cooling, grading, storage, wrapping, packaging (4)

4.2.2
- Acid content
- Juice content
- Sugar content
- Fibre content (4)

4.3 (a) Slows down ripening and extends shelf life

(b) Prevents rot during transportation and storage or fungal diseases

(c) Prevents fungal diseases and extends shelf life

(3 × 2) (6)

4.4
- Amount of time spent on picking per hectare
- Amount of labour
- Type of picking equipment
- Starting time for picking
- The starting date and final date for picking (duration) (Any 4 × 1) (4)

4.5 Wrapping and cooling reduce rot and extend shelf life. (1)

4.6 Natural air drying ─ the grain is exposed to the heat of the sun and gentle winds.
Artificial drying ─ fans or heaters are used to force air out of the grain. (2)

[40]

TOTAL: 150

Copyright reserved