higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

PLANT PRODUCTION
NQF LEVEL 2

7 November 2022

This marking guideline consists of 7 pages.

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SECTION A

QUESTION 1

1.1	1.1.1	A
	1.1.2	B
	1.1.3	B
	1.1.4	A
	1.1.5	B
	1.1.6	A
	1.1.7	A
	1.1.8	D
	1.1.9	A
	1.1.10	B

(10 × 1) (10)

1.2	1.2.1	True
	1.2.2	False
	1.2.3	False
	1.2.4	True
	1.2.5	True
	1.2.6	True
	1.2.7	False
	1.2.8	True
	1.2.9	True
	1.2.10	True

(10 × 1) (10)

1.3	1.3.1	D
	1.3.2	F
	1.3.3	A
	1.3.4	H
	1.3.5	B
	1.3.6	C
	1.3.7	E
	1.3.8	G
	1.3.9	L
	1.3.10	I

(10 × 1) (10)
[30]

TOTAL SECTION A: 30

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SECTION B

QUESTION 2

2.1 2.1.1 Crop rotation is the growing of different crops✓ in the same field season after season✓ while monoculture is growing of the same crop✓ on the same field every season.✓

2.1.2 Evaporation is the loss of water✓ from water bodies (soil, rivers, dams) in the form of steam✓ while transpiration is the loss of water from the leaves of a plant✓ in the form of water vapour/steam/gas.✓

2.1.3 Thinning is taking out some seedlings to avoid overcrowding✓✓ while blanking is filling in of gaps on the planted area.✓✓

2.1.4 An annual weed is a weed that completes its life cycle in one growing season✓✓while a perennial weed is a weed that does not die off after a year.✓✓

(4 × 4) (16)

2.2 2.2.1
- Broad-leaf weeds
- Grass-type weeds
- Bulb-type weeds (3)

2.2.2
- Serve as mulch
- Minimise soil erosion
- Some weeds improve soil fertility
- Restore moisture content (Any 3 × 1) (3)

2.2.3
- Remove weeds by hands
- Crop rotation
- Soil cultivation
- Mulching
- Biological control (Any 4 × 1) (4)

2.2.4
- Pre-emergence weed killer✓ controls weed before weed seed starts to germinate.✓
- Selective weed killer✓ only kills the unwanted crop and leaves the cultivated crop.✓ (4)

[30]

QUESTION 3

3.1 3.1.1
- Foliar nematode
- Root nematode

3.1.2
- Lay eggs inside the root hairs which blocks vascular bundles from transporting water and nutrients,✓ feed themselves on leaves, plants wilt and die.✓

(2 × 2) (4)

3.2 3.2.1
- Sub-irrigation
- Over-head irrigation (2)

3.2.2
- Initial cost is high
- Disease spreads rapidly
- Technical skills are required (3)

3.2.3
- Environmental conditions are under control
- Good-quality produce
- Grow many plants in a small area
- Good profit margins
- Easy to spot diseased plants (5)

3.3 3.3.1 Photosynthesis (1)

3.3.2 Photosynthesis is the process of food making✓ using the radiant energy.✓ (2)

3.3.3
- Adequate carbon dioxide✓ is required as a main building block of carbon compounds; the higher the carbon dioxide concentration, the greater the speed of photosynthesis.✓
- Chlorophyll✓ is the green pigment that traps the sun's radiant energy.✓
- Enzymes✓ speed up the chemical reaction. Environmental temperature plays an important role during photosynthesis as it controls enzymes; too high or too low temperatures deactivate enzymes.✓
- Enough sunlight;✓ the speed of photosynthesis depends mostly on the intensity of the light and the length of the light intensity.✓
- Enough accessible water✓ is required for the process of photosynthesis. Water molecules provide hydrogen and oxygen which are used to form glucose molecules.✓

(5 × 2) (10)

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3.3.4
- Trellising✓ – plants are supported with sticks or poles to make sure the leaves get as much as possible exposure to sun rays.✓
- Pruning✓ – shaping the plant and removing the unwanted branches to ensure that leaf surfaces get as much as possible sunlight throughout the day.✓
- Green house✓ – creates a conducive environment with best water-level availability, allows 85% or more of sunlight which maximises photosynthesis.✓
- Wide spacing✓ – all leaves of plants are exposed to sunlight so they can photosynthesise.✓ (4 × 2) (8)

[35]

QUESTION 4

4.1 4.1.1 Cross-pollination (1)

4.1.2 Cross-pollination is the process of applying pollen from one flower to the pistils of another flower. Pollination occurs in nature with the help of insects and wind. (2)

4.1.3
- Animals
- Water
- Wind (3)

4.1.4 Dicotyledonous flowers are adapted to animal pollination due to the following:
Sepals are brightly coloured to attract animals,✓✓ flowers have nectar✓✓ and an attractive smell.✓✓ (3 × 2) (6)

4.2 4.2.1
- Hybridisation
- Selection
- Mutation
- Genetic modification (4)

4.2.2
- Hybridisation – this is when two different plants are cross bred.
- Selection – this is whereby the plants are kept for production process.
- Mutation – this is the change that occurs in DNA sequences.
- Genetic modification – the process whereby plants are modified by transferring a gene from another plant to it. (8)

[24]

QUESTION 5

5.1 5.1.1
- Tension meter
- Evaporation pan
- Moisture probe (Any 2 × 1)

5.1.2
- Soil erosion
- Leaching of nutrients

(2 × 2) (4)

5.2 5.2.1
- Low amount of water
- Uneven land (2)

5.2.2
- Pipes
- Pumps
- Filters
- Valves (2)

5.2.3

Micro irrigation	Flood irrigation
• Most efficient	• Most inefficient
• It is expensive	• It is cheap
• Weed growth is kept to the minimum	• It can lead to soil erosion
• Pest control is easier	• Build-up of alkalinity in the soil
• Fewer weed growth✓	• Apply water in large quantities
• Water is deposited directly in the root zone	• Limited crops
• Highly specialised	• Need a sufficient water supply
• Saves about 80–90% water	• Saves about 55–65% water

(Any 3 + 3) (6)

5.3 5.3.1
- Size
- Colour
- Moisture level
- Sugar level
- Acid level
- Mass (5)

5.3.2 It is costly,✓ technical skills required,✓ require maintenance✓ (2)

5.4
- Selecting a good site – a good site for vegetables should be near to farm house in order for it to receive the best monitoring.
- Clear the land – trees, bushes should be removed to ensure that there are no stumps that will hinder the plant growth.
- Soil preparation – the soil should be thoroughly prepared; apply fertiliser to improve the nutrient level in the soil.
- Topography is important – growing plants lengthwise is important to reduce soil erosion.
- Mark out beds – tape measures or a string are used to mark out the corners of the bed. (Any 4 × 2) (8)

5.5 Tomatoes are harvested by hand; you carefully twist off the fruit✓ when it is light red or pink.✓ (2)

[31]

TOTAL SECTION B: 120
GRAND TOTAL: 150

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