higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

PLANT PRODUCTION
NQF LEVEL 2

2 March 2020

This marking guideline consists of 7 pages.

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QUESTION 1

1.1	1.1.1	True		
	1.1.2	True		
	1.1.3	False		
	1.1.4	True		
	1.1.5	True		
	1.1.6	False		
	1.1.7	True		
	1.1.8	True		
	1.1.9	True		
	1.1.10	True		
			(10 × 1)	(10)

1.2	1.2.1	H		
	1.2.2	J		
	1.2.3	I		
	1.2.4	K		
	1.2.5	L		
	1.2.6	E		
	1.2.7	C		
	1.2.8	F		
	1.2.9	B		
	1.2.10	A		
			(10 × 1)	(10)

1.3.1	1.3.1	Used to measure amount of water needed in the soil		
	1.3.2	Elements soil needs in large quantities		
	1.3.3	Crop production using growth medium other than soil		
	1.3.4	Filling gaps in planted area		
	1.3.5	Modifying plants by transferring gene from another plant to it		
			(5 × 2)	(10)
				[30]

QUESTION 2

2.1 2.1.1 In hybridisation two different plants are crossbred✓✓ whereas selection refers recognising desirable genotypes and keeping it for reproduction.✓✓ (2 + 2) (4)

2.1.2
- To improve uniformity and earlier maturity
- To produce higher yields
- To enhance processing characteristics
- To increase disease resistance
- To produce quality vegetables with long storage life

(Any applicable 4 × 1) (4)

2.1.3
- Selection
- Hybridisation
- Genetic modification (Any 2 × 1) (2)

2.2 2.2.1
- Fresh
- True cultivar
- Free from foreign matter
- Free from pests and diseases
- Free from weed seeds
- Well-cured
- High bushel weight (Any 5 × 1) (5)

2.2.2
- pH level
- Organic content of soil
- Water availability
- Drainage
- Soil texture
- Soil type (Any 4 × 1) (4)

2.3 2.3.1
- Sun
- Wind
- Humidity
- Temperature (4)

2.3.2 Deciding when to irrigate and how much to irrigate crops (2)

2.3.3
- Evaporation pan
- Tensiometer (2)

2.3.4 Evapotranspiration rate✓ is used to determine how much water to apply✓ based on estimates of the quantity of water removed from surface due to evaporation and transpiration.✓ (3)

[30]

QUESTION 3

3.1 3.1.1
- Asexual reproduction
- Sexual reproduction (2)

3.1.2
- Ovary
- Style
- Stigma (Any 2 × 1) (2)

3.1.3

ANIMAL POLLINATED	INSECT POLLINATED
• Large and brightly coloured petals attracting insects • Scent and nectar • Pollen grain sticking to insect's well • Stiff and firmly attached anthers inside flower to brush against insects • Sticky stigma inside flower allowing pollen to stick insects when brushing past (Any FOUR)	• Small, often dull green or brown petals • Without scent or nectar • Easily carried away by wind without sticking together • Loose anthers on long filament outside flower releasing grain easily • Feathery stigma outside flower forming network to catch drifting pollen grain (Any FOUR)

(4 × 2) (8)

3.2 3.2.1 Growing different crops in succession on piece of land to avoid soil degradation and to control weeds, pests and diseases (2)

3.2.2

BENEFITS	LIMITATIONS
• Reduces soil-borne pests and diseases • Enables crops like brassica to benefit from nitrogen put into soil by legumes • Enables specific soil preparation to be carried out for individual crops • Avoids build-up of specific weeds	• Makes it difficult to include permanent crops • Difficult to implement in small areas • Ineffective in controlling long-term soil-borne pests and diseases like eelworm and white rot in onion • Same area of land might not be required for each crop

(4 × 2) (8)

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3.3 3.3.1 Yes (1)

3.3.2
- Pest and diseases affect crop growth thus reducing yield.
- Crop quality is also affected which leads to less profit.
- The cost of controlling pests and diseases increases the production cost.
- Sorting of produce affected by pest and disease is time consuming and costly.
- The storage life of produce may also be shortened by growth infestation. (Any 4 × 1) (4)

3.3.3 Practice combining the use of biological,✓cultural and chemical practices✓ to control insect pests in agricultural production.✓ (3)
[30]

QUESTION 4

4.1 4.1.1 A – Pinnate
B – Palmate
C – Reticulate
D – Dichotomous
E – Parallel (5 × 1) (5)

4.1.2 Leaf area growth determines the light interception which is an important factor in determining plant production. (2)

4.1.3
- The leaf absorbs and releases gases through the stomata.
- When the guard cells lose water the stomata closes.
- When the guard cells absorb water and swells the stomata opens. (3)

4.2 4.2.1 A – Drip irrigation
B – Centre pivot irrigation system (2)

4.2.2
- Water is applied to the soil in small quantities.
- Less irrigation water is lost
- Weed growth is kept to the minimum.
- The water is automatically deposited to the root area.
- Pest control is easier. (5)

4.2.3 A (1)

4.2.4
- Topography
- Soil type
- Type of crop
- Quantity of water available
- Salt content of the soil (5)

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4.2.5 (a) Flowering and pod development
(b) Flowering, fruit set and fruit enlargement
(c) Root enlargement
(d) Head development
(e) Bulb development

(5 × 1) (5)

4.2.6
- It irrigates crops from above leaving droplets on the leaves.
- If the water has salt imbalances the leaves may be scotched.
- Droplets of water on the leaves may take long to dry out and may attract flies.
- It may cause fungal disease in the crop (Any 2 × 1) (2)

[30]

QUESTION 5

5.1 5.1.1
- Residual
- Contact
- Systemic (3)

5.1.2
- Residual herbicide stays active in the soil and is absorbed by plant roots which causes the whole plant to dry out and die.
- Systemic herbicide is absorbed by leaves and moves down the stem to roots which are then destroyed.
- Contact herbicide kills off all parts of the plant when it comes in contact with the leaves. (3 × 2) (6)

5.2 5.2.1 Providing support keeping the plant off the ground to ensure that fruit are not in contact with the soil to prevent loss and improve productivity (2)

5.2.2
- Tomatoes
- Cucumber
- Beans (Any 2 × 1) (2)

5.2.3
- Increases exposure to sunlight
- Increases plant growth and yield
- Improves quality of fruit or foliage by preventing rot
- Promotes healthy crops
- Easier crop maintenance such as pruning and fertilising
- Allows proper circulation reducing diseases
- Easier to withstand damage by heavy wind (Any relevant 5 × 1) (5)

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5.3 5.3.1
- Farmstall
- Farm gate
- Municipal fresh market
- Retail stores
- Export
- Direct delivery to consumers (Any 4 × 1) (4)

5.3.2
- Maintaining fresh produce quality in terms of appearance texture, flavour and nutritive value
- Ensuring food safety
- Reducing losses between harvest and consumption (3)

5.4 In controlling the spread of plant pests and diseases, the state has enforced plant quarantine✓ which restricts the movement of people and transportation of plant materials which may be carriers of pest and diseases.✓ It has also banned the cultivation of susceptible plants in a close region.✓ Furthermore the state has enforced the inspection of all imported plants and plant products✓ and destruction of plant material with any signs of serious diseases or pests.✓ The state also provides seed certification✓ and plant improvement schemes.✓ (Any 5 × 1) (5)

[30]

TOTAL: 150

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