higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

PLANT PRODUCTION
NQF LEVEL 3

3 March 2020

This marking guideline consists of 7 pages.

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SECTION A

QUESTION 1

1.1	1.1.1	C		
	1.1.2	B		
	1.1.3	A		
	1.1.4	A		
	1.1.5	C		
	1.1.6	B		
	1.1.7	A		
	1.1.8	D		
	1.1.9	D		
	1.1.10	A		
			(10 × 1)	(10)
1.2	1.2.1	True		
	1.2.2	True		
	1.2.3	False		
	1.2.4	False		
	1.2.5	True		
	1.2.6	True		
	1.2.7	False		
	1.2.8	True		
	1.2.9	False		
	1.2.10	False		
			(10 × 1)	(10)
1.3	1.3.1	F		
	1.3.2	H		
	1.3.3	A		
	1.3.4	I		
	1.3.5	G		
	1.3.6	D		
	1.3.7	L		
	1.3.8	C		
	1.3.9	N		
	1.3.10	B		
			(10 × 1)	(10)
				[30]

TOTAL SECTION A: 30

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SECTION B

QUESTION 2

2.1 2.1.1 Biological

- Releasing parasites living off the plant pest
- Introducing disease organisms that affect the plant pest
- Multiplying the natural enemies of the pest (3 × 1)

Cultural

- Site location.
- Crop isolations.
- Timing of seeding and planting.
- Crop rotation.
- Mulches.
- Crop residue.
- Pruning, defoliation and topping.

(Any 3 × 1) (6)

2.1.2 (a) Applying spray mixture with low concentration of chemicals at high volumes

(b) Spray mixture with a high concentration of chemicals applied at low volumes

(c) Spray mixtures applied at extremely high concentration but in small volumes

(d) Mixtures sprayed from aeroplane at high speed

(4 × 2) (8)

2.2 2.2.1 Intra-row spacing is the distance between plants within a row while inter-row spacing is the distance between parallel rows. (2)

2.2.2

- Soil depth
- Soil fertility
- Irrigation methods
- Cultivation
- Cultivar
- Trellising (if used) (Any 5 × 1) (5)

2.2.3

- Wider planting distances lead to better root development
- Better drought resistance
- Lengthens productive life of plant
- Better aeration and absorption of sunlight
- Easier to manage
- Less competition for nutrients (Any relevant 5 × 1) (5)

2.3
- Susceptibility to diseases
- Yield potential under specific conditions
- Growth period
- Adaptability to soil type
- Adaptability to specific climatic conditions
- Seed yield (Any relevant 5 × 1) (5)

2.4 2.4.1 Plant deficiency is a result of mineral✓ shortages in the plant
Plant disease is damage to crops by micro-organisms✓ and the symptoms vary (2)

2.4.2 Examples of plant deficiencies: Yellowing, discoloration, stunting or curling
Examples of plant diseases:
Fungi – leaf spots
Bacteria – plant dries out, galls form, part of plant rots
Virus – marks on leaves, stunting, overgrowth (2)
[35]

QUESTION 3

3.1 3.1.1
- Colour
- Sweetness
- Odour or smell
- Softness
- Size
- Weight (Any relevant 3 × 1) (3)

3.1.2
- Bananas
- Oranges
- Tomatoes
- Avocados (Any relevant 3 × 1) (3)

3.1.3
- Less output
- Quality loss (2)

3.2 3.2.1
- Plants potted with minimum root damage
- Seedlings grow without tangled roots
- Easy sowing, handling and planting
- Efficient use of space
- Low cost
- Easy storage
- Reused (Any relevant 3 × 1) (3)

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3.2.2
- Medium must have suitable pH and electrical conductivity
- Good water-holding capacity
- Well-aerated
- Free of diseases and pests
- Growing media components should either be organic (peat moss, bark, coconut) and/or inorganic to include perlite, vermiculite, sand, et cetera (4)

3.2.3 Mini-irrigation, micro-irrigation or drippers (2)

3.2.4
- Water directly applied to crop
- Uses less water
- Slow water infiltration (3)

3.3 3.3.1 Plant specially developed to have certain features

OR

Specific genetic composition which is used to propagate or reproduce similar plants (2)

3.3.2
- Vigorous growth
- High yield potential
- Well-adapted to likely conditions
- Suited to variable climate
- Low maintenance
- Resistant to pest, disease and drought (Any relevant 5 × 1) (5)

3.4 Advantages
- Improves management of natural resources
- Increases economic stability
- Acts as windbreak
- Shade for plants and animals
- Root system takes up nutrients releasing it at shallower depths
- Improves soil fertility
- Leave mulch reducing evapotranspiration
- Better water infiltration
- Reduces erosion
- Assists with biological pest control
- Source of fuel and feed for animals (Any FOUR)

Disadvantages
- Some species invasive
- Managing involves diverse use and daily farming issues
- Yield takes many years
- Requires proper knowledge of technology
- Agroforests often see reduced yields as smaller crops compete with trees for light, water and nutrients
- Trees might take long to pay off
- Use of farm machines difficult in confined space of forest (Any FOUR)

(4 + 4) (8)

[35]

QUESTION 4

4.1 4.1.1 Pineapples are treated with a plant hormone. This substance will influence the growth and development of the plant. Fungicide will control or prevent fungal diseases. (3)

4.1.2 Papaya needs to be dipped in warm water (42° C) for 30 minutes, which is then followed by dipping in warmer water (49° C) for a few minutes. After that, they are cooled under a water shower. (3)

4.1.3 Hot water treatment: A non-chemical method of controlling decay is by far the most effective post-harvest treatment against diseases. Green mature fruits are dipped in hot water for 5 to 10 minutes, killing disease-causing organisms without injuring the fruit. Do not expose fruit to heat or sun to avoid them shrivelling. (2)

4.1.4 Grapes are treated with a plant hormone. Treatment with sulphur dioxide (SO_2) helps to prevent bacterial diseases. Bunches of grapes are sometimes wrapped in tissue paper that has been treated with chemicals. (3)

4.2 4.2.1 Sexual reproduction happens when the ripe pollen from the anther is transferred to the ripe stigma of the flower,✓✓ while asexual reproduction happens when the vegetative parts of the plant is used for propagation.✓✓ (2 + 2) (4)

4.2.2
- Rootstock is selected for resistance✓ to disease and adaptation✓ to the environment.
- Scion is selected for fruit production.✓
- Rootstock and scion can be from different varieties of the same kind of tree.✓
- Technique enables new tree formed by scion to come into fruit much earlier than if grown from seed.✓ (5)

4.2.3
- Disease-free, fresh (newly cut) and young
- Must have mother characteristics (resisting diseases and drought)
- Undamaged plants
- No cuts or bruises
- Taken from mature plants with fully grown tubers
- Take cuttings from the bottom and middle parts of stem
- Take cuttings from mature plants with fully grown tubers

(Any relevant 5 × 1) (5)

[25]

QUESTION 5

5.1 5.1.1 Bacterial disease/Mosaic virus or black rot

5.1.2 Soft rot/fungal

5.1.3 Bacterial wilt/bacterial disease

5.1.4 Mottling, discolouration on leaves, slow growth

5.1.5 Covered by white patches on surface of leaves, discoloured and pale

5.1.6 Yellow or brown patches on upper and or lower surface of leaves/patches of black spots

(6 × 2) (12)

5.2
- Frost or cold damage
- Nutritional disorders/Deficiencies
- Herbicide injury
- Genetic disorders
- pH fluctuation
- Oxygen fluctuation
- Light fluctuation
- Moisture fluctuation
- Temperature changes

(Any 4 × 1) (4)

5.3
- Biological
- Mechanical/Physical
- Cultural

(Any relevant 3 × 1) (3)

5.4 5.4.1
- Improves soil structure and fertility
- Increases nitrogen in the soil
- Controls pest and diseases

(Any relevant 3 × 1) (3)

5.4.2
- Rotating crops often requires more time in preparing fields for crops.
- Fungi and pests left behind from a previous crop can potentially harm the new crop.
- Some crops coexist better with weeds and fungi, and a new crop may struggle.
- Plant debris can also cause diseases when the new crop is planted.

(Any relevant 3 × 1) (3)

[25]

TOTAL SECTION B: 120
GRAND TOTAL: 150

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