higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

PLANT PRODUCTION
NQF LEVEL 3

17 November 2023

This marking guideline consists of 8 pages.

Copyright reserved

QUESTION 1

1.1

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

Copyright reserved

QUESTION 2

2.1 2.1.1 Intra-row spacing is the distance between plants within a row. Inter-row spacing is the distance between parallel rows. (2 × 2) (4)

2.1.2
- Soil depth
- Fertility of the soil
- Irrigation methods to be used
- Methods of cultivation
- Cultivar
- Method of trellising (Any 5 × 1) (5)

2.1.3
- The larger the planting distances, the bigger the volume in the soil for root developments.✓
- The larger the planting distances, the better the drought resistance will be✓ and there will be less competition for water.
- A larger planting distance will lengthen the productive life of the plant.✓ (3)

2.2 2.2.1
- Run-off is reduced.✓
- Organic matter content of soil and the biological activity are maintained.✓
- More efficient use is made of soil nutrients.✓
- Trees help in the reclamation of polluted soils.✓
- Agro-forestry helps to create a healthy environment by improving soil.✓
- Micro-climates are moderated, thus giving shelter to nearby crops and livestock.✓
- Nitrogen-fixing trees and shrubs can increase the nitrogen inputs to agro-forestry systems.✓
- The decomposition of tree litter and pruning can add to soil mulch and contribute to soil fertility.✓
- Agro-forestry can provide a diverse farm economy,✓ that is, harvesting at different times of the year. (Any 7 × 1) (7)

2.2.2
- Trees may compete with some crops when resources are limited.
- When trees and crops are in direct competition for surface water, trees will come off best and other plants will suffer.
- Trees that use water during the period between successive crops will reduce water in the soil for the follow-up crop.
- Market demand for the tree products may be different from the market demand for the crop. (Any 3 × 1) (3)

2.2.3
- Improves drainage
- Improves soil structure
- Increases water holding capacity
- Reduces evaporation
- Improves soil temperature (3)

[25]

QUESTION 3

3.1 3.1.1 Propagation is the increase in the number of plants using sexual or asexual reproduction techniques or methods. (1)

3.1.2 Sexual reproduction happens when a pollen grain from the anthers combines with a ripe stigma of a flower,✓✓ while asexual reproduction happens when using a vegetative part of the plant.✓✓ (3)

3.1.3
- Budding
- Grafting
- Layering
- Cuttings (4)

3.1.4 A shoot that is inserted into a root stock or a shoot that is used to form a graft. (1)

3.1.5
- Presence/absence of certain root diseases in the area
- Presence/absence of nematodes or eelworms
- Local climatic conditions and location of the orchard
- Skill of grower for field budding or grafting (Any 2 × 1) (2)

3.1.6
- Good root stock works well with the scion vinery.
- 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 attain graftable size easily. (5)

3.2 3.2.1 Mixing of fertilizers with irrigation and applying them during irrigation

3.2.2 Applied when the plants have emerged.

3.2.3 Means the placing of the fertilizers in a band at the bottom of the furrow, below the seeds.

Copyright reserved

3.2.4 Means the fertilizers is applied by scattering it all over the surface. (4 × 1) (4)

3.3
- Climate and weather conditions
- The nature of the soil
- The leaf surface
- The growth rate of the plant (4)

[25]

QUESTION 4

4.1
- A new seedbed should be prepared a few months before planting time and be kept free of weeds.
- Soil must be sandy with less than 15% clay.
- Waterways and contours to divert storm water from the seedbeds must be made.
- To ensure effective drainage, the beds must be raised above the ground surface.
- The seedbeds should be preferably 1 meter wide, with paths of about 0,5 meter between them.
- The seedbeds must be completely level so that the water will not collect in places where it can damage the plants.
- The paths between the seedbeds should also have a slope to allow for rapid run-off of excess water.
- The length of the seedbeds may vary, but 30 metres is a manageable length.
- Fertilizers are watered for two weeks to encourage weed growth.
- Seed is sown in rows after weed growth has been eliminated.
- Beds are watered daily for 60 days, then every second day, and finally twice a week to harden the plants.
- After the emergence of plants, all weeding is done by hand. (Any 5 × 1) (5)

4.2 4.1.1 The germination percentage✓ and the quality✓ of the seed or plants must be known before sowing or planting. (2)

4.1.2
- The growing medium must suit✓ the seed and have good rooting qualities.✓
- The growing medium must suit the nursery system in use.✓
- The growing medium must be free of weed seeds,✓ harmful insects✓ and pathogens.✓
- To ensure effective germination, the growing medium must be kept moist✓ at all times.
- The growth medium must have optimal characteristics for various seed species.✓ (5)

4.3 4.3.1 (a) Tomatoes – Carefully pulled off the plant with twisting movement when they are slightly red in colour.
(b) Cabbage – The cabbage head is cut just above the ground level as soon as the head is firm, using a sharp knife.
(c) Carrots – Carefully loosening the soil with a fork and then pulling them out one by one.
(d) Onions – When the leaves turn brown and the bulbs have dry skin around them. (4)

4.3.2
- Tomatoes – Have a firm, turgid appearance,✓ uniform and reddish shiny colour, consider planting date✓ and size.✓
- Cabbage – Hard/firm, large leaves curled inwards,✓ consider planting date✓ and size.✓
- Carrots – Pull them out, ✓they should have a tender texture that is firm,✓ not soft, limp or chewy. Should also have an even, bright orange colour,✓ consider planting date✓ and size.✓
- Onions – Pull them early✓ for inspection and let them grow into larger firm and round bulb onions,✓ consider planting date✓ and size. (4)

[20]

QUESTION 5

5.1 5.1.1 Mosaic (1)

5.1.2
- Dead spots on the outer portion of the leaves
- Gray or brown interior
- Yellow halo (cabbage ringspot)
- Leaves develop mottled pattern
- Cabbages start rotting (5)

5.1.3
- Viral diseases
- Fungal diseases
- Bacterial diseases
- Nematodes (Any 3 × 1) (3)

5.1.4 Breeding of resistant cultivars✓
- Development of new cultivars makes plant more resistant to many diseases.✓

Healthy plants✓
- Healthy plants are always more resistant to a wide range of diseases.✓

Soil cultivation and planting practices✓
- Plants should be spaced so that the leaves do not remain moist all day.✓

Soil drainage✓
- Plants that are prone to root disease should not be grown in poorly drained soils.✓

Crop rotation✓
- It is always good farming practice to rotate or change the crops grown in the same field.✓

Sterilization of tools and other equipment✓
- Pruning shears and knives should be disinfected with 5% formalin solution.✓

Controlled irrigation techniques✓
- Over-wetting the soil can encourage root pathogens.✓ (10)

5.2
- Pests can become resistant to the chemicals.
- Some chemicals can be poisonous to domestic animals and humans.
- Chemicals can be poisonous to predators.
- Some chemicals are often soluble in water and end up in rivers. (4)

5.3
- Aphids
- Spider mites
- Stem borers
- Beetles (Any 2 × 1) (2)

[25]

QUESTION 6

6.1 Pathogen is a disease-causing✓✓ organism and a vector is a carrier✓✓ of diseases from one crop to the next. (4)

6.2
- Use only when there is no other option.
- Use strictly according to the prescriptions 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 4 × 1) (5)

6.3 6.3.1 Chewing insects on the surface of the leaves

6.3.2 Insects that suck the sap from the leaves and plants

6.3.3 Smaller chewing insects that live part of their life cycle in the stems of plants

6.3.4 Insects that live and feed in the soil and that interfere with root growth

(4 × 2) (8)

6.4	6.4.1	• Harvest volume • Intended purpose; example: canning • Crop type • Time of the day • Harvesting tools • Number of workers	(Any 4 × 1)	(4)
	6.3.2	• Washing • Grading • Packaging • Sorting • Use of germicides • Cooling	(Any 4 × 1)	(4)
				[25]
			TOTAL:	**150**

Copyright reserved