higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

ADVANCED PLANT PRODUCTION
NQF LEVEL 4

12 November 2024

This marking guideline consists of 8 pages.

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QUESTION 1

1.1	1.1.1	D		
	1.1.2	B		
	1.1.3	B		
	1.1.4	C		
	1.1.5	A		
	1.1.6	B		
	1.1.7	C		
	1.1.8	B		
	1.1.9	A		
	1.1.10	C		
			(10 × 1)	(10)
1.2	1.2.1	Off-sets		
	1.2.2	Suckers		
	1.2.3	Tuber		
	1.2.4	Nodal		
	1.2.5	Budding		
	1.2.6	Sub-		
	1.2.7	Hardwood cutting		
	1.2.8	Basal		
	1.2.9	Drip area		
	1.2.10	Trench		
			(10 × 1)	(10)
1.3	1.3.1	Botrytis		
	1.3.2	Nursery		
	1.3.3	Micro elements		
	1.3.4	Grafting		
	1.3.5	Hormone(s)		
	1.3.6	Mulch		
	1.3.7	Thawing		
	1.3.8	Scarification		
	1.3.9	Ventilation		
	1.3.10	Seed treatment		
			(10 × 1)	(10)
				[30]

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QUESTION 2

2.1

		INSECT-POLLINATED FLOWERS	WIND-POLLINATED FLOWERS
2.1.1	Petals	They have well-developed and colourful petals✓	Their flowers have no entertaining colours✓
2.1.2	Stamens	Their stamens are well-positioned for the maximum contact✓	They have protruded stamens into the wind for easy pollination✓
2.1.3	The pollen	Their pollen is sticky and heavier that of wind-pollinated flowers✓	Their pollen is very light and non-sticky✓
2.1.4	Shape of flower	They have elaborate shapes to allow easy access for insects ✓	They have small clustered flowers✓

(4 × 2) (8)

2.2 2.2.1 Layering (1)

2.2.2 A – Air layering
B – Simple layering
C – Tip layering
D – Serpentine layering
E – Trench layering
F – Mound/Stool layering (6 × 1) (6)

2.2.3
- The offspring is genetically like the parent plant.
- Generally larger plants can be obtained more quickly than with sexual propagation.
- Seedless plants can be propagated.
- The genetic characteristics of a particular plant is preserved.
- Plants that do not produce viable seeds can be propagated.
- Plants can be propagated that produce seeds that are difficult to germinate or have a very short storage life.
- It bypasses the juvenile stage of plant growth when the plants do not yet flower and bear fruit. (Any 5 × 1) (5)

2.2.4
- Proper light levels
- Favourable moisture supply
- Optimum temperature
- Well-drained rooting medium
- Humidity
- Aeration
- Favourable climatic conditions (Any 5 × 1) (5)

[25]

QUESTION 3

3.1 3.1.1 It is a flowering plant✓ bred✓ by humans for its desirable characteristics✓ (3)

3.1.2
- Smell
- Flower shape/size
- Colour
- Pest resistance
- Strong stems (Any 4 X 1) (4)

3.1.3
- Grafting
- Cuttings
- Division
- Layering
- Tissue culture
- Seed production (Any 4 × 1) (4)

3.2 3.2.1
- Initiate rooting after cutting
- Cell growth and plant elongation (2)

3.2.2
- Giberellic acid (1)

3.2.3
- The fruit does not have any seed (1)

3.3
- The growth medium must be well-prepared and ready for transplanting seedlings.
- Choose the right time.✓
- The seedlings must be about 50 mm high for transplanting.✓
- Make a hole in the middle of a container or in the ground.✓
- Only one seedling should be planted in each planting container or hole.✓
- Remove the plants carefully from the moist soil or where they germinated and do not break their roots.✓
- Place each seedling in a hole and ensure that the roots are placed in a downward direction and are not bent.✓
- Close (backfill and lightly pack)✓ the hole around the stem with the medium.
- Ensure that the medium is in contact with the roots and water it well.✓
- Shield the plant from direct sunlight.✓
- Check the plant daily.✓ (Any 8 × 1) (8)

3.4
- Ensure that the plant is healthy.
- Ensure that the soil is not dry.
- Check on any signs of pests and diseases.
- Ensure or check whether the management practices applied are effective.
- Avoid wilting. (Any 2 × 1) (2)

[25]

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QUESTION 4

4.1
- Plant health – Apply good drainage and aeration, proper fertilising and schedule irrigation.✓✓
- Building up a population of beneficial organisms – Introduce and build up populations of beneficial insects like ladybirds and pray mantis that feed on many of the insects that eat plants.✓✓
- Monitoring pest populations – Do scouting, spot treatments and use commercially available botanical formulations that are not harmful to plants.✓✓
- Nursery hygiene – Control weeds and use proper sanitation. Use footbaths and workers' safety wear should be changed, washed and disinfected.

(Any 3 × 2) (6)

4.2
- Weeds compete with crops for water, air and nutrients.
- Weeds that grow between crops can smother the crops.
- Weeds can overshadow crops as they grow faster and then reduce the light needed by crops for their growth.
- Weeds can harbour pests which will destroy crops.
- Some weeds release toxins that may be harmful to plants.
- Weeds reduce the overall productivity of the farm, thereby increasing the cost of production. (Any 5 × 1) (5)

4.3
- Destroy weeds while they are seedlings.✓
- Weeds that are past the stage of seedlings must be destroyed before they flower.✓ (2)

4.4 4.4.1 Spring (1)

4.4.2 In this season weeds are in their growth stage before they sprout.✓✓

OR

Spring has the advantage that it is both warm and wet and weed killers require absorption from the soil to activate them. (Any 1 × 2) (2)

4.4.3
- Pre-emergence
- Post-emergence
- Broad leaf
- Narrow leaf
- Selective weedicide
- Non-selective weedicide
- Contact weedicide
- Systemic weedicide
- Residual weedicide (Any 3 × 1) (3)

4.5
- If the plant is not pruned in the nursery, access✓ will become difficult as the space inside the nursery is limited/will decrease.
- The light✓ from the sun or artificial source inside the nursery will be cut off. Plants inside the nursery will become elongated✓ (long and thin).
- Plants will become diseased✓ and unattractive.
- Productivity✓ is reduced or plant growth will be stunted. (4)

4.6 Moderate pruning takes away about half of the new growth✓ while light pruning involves the removal of the tips✓ of the shoots(about a quarter of the new growth (2)

[25]

QUESTION 5

5.1 5.1.1
- Nutrient deficiencies
- Overwatering
- Underwatering
- Excess fertiliser (Any 2 × 1) (2)

5.1.2
- Frost
- High temperatures
- Lack of light
- Lack of drainage (Any 3 × 1) (3)

5.2

FUNGAL DISEASE	BACTERIAL DISEASE
ONE example of a disease	ONE example of a disease
• Powdery mildew • Botrytis✓ (Any 1)	• Canker✓ (1) (2)
TWO examples of symptoms	TWO examples of symptoms
• Spores • Sooty moulds✓ • Leaf curl✓ (Any 2)	• Leaf spots✓ • Specks and blights (2) (4)

5.3
- Crop monitoring indicates the pest status✓
- and extent✓ of the crop disease.
- The producer remains informed of the health status of the crop.✓
- Information on the crop enables the farmer to make decisions✓
- on the control actions✓
- that need to be taken and to select✓ a suitable control action. (Any 3 × 1) (3)

5.4 5.4.1
- Stunted plants✓
- Necrotic streaks in leaves and muted variegation✓
- Discolouration✓ – mosaic on leaves
- Leaves are curled✓ (Any 3 × 1) (3)

5.4.2
- Remove/prune and discard infected plants✓
- Monitor and manage✓ the vector, eg. thrips populations
- Clean tools during and after use✓
- Handwashing and sanitation✓ (Any 3 × 1) (3)

[20]

QUESTION 6

6.1
- Cultivation of pest-resistant crops
- Establishment of trap crops
- Mixed cultivation
- Strip cultivation
- Crop rotation
- Destroying remnants of pest infested crops
- Sanitation practices
- Ploughing in of host plants for pests (Any 5 × 1) (5)

6.2
- Record-keeping
- Temperature regulation – ventilation
- Watering
- Removal of debris
- Scouting
- Weeding
- Pruning
- Disinfecting – footbaths (Any 5 × 1) (5)

6.3
- Water application
- Disease control
- Date planted
- Cultivar
- Fertiliser application
- Harvest date
- Temperature (Any 4 × 1) (4)

6.4
- Rise in temperature and respiration rate
- Relative humidity
- Water stress
- Increase in deterioration due to microorganisms
- Reduction in carbohydrates and growth regulators
- Increase in ethylene
- Preservative solutions
- Precooling and storage
- Packing and transporting (Any 5 × 1) (5)

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6.5 6.5.1
- Precooling is a treatment given to flowers to remove the field heat immediately after harvest.✓
- It can be done with ice-cold water, cold water or forced air.✓ (2)

6.5.2
- Cold storage: After pre-cooling and pulsing, the flowers can be stored at a low temperature,✓ i.e. in cold store
- to regulate the flower market or to avoid the glut at the market.✓ (2)

6.5.3
- Holding: flowers are held in a solution containing sucrose, germicide, ethylene inhibitor and a growth regulator.
- The flowers can be kept in a holding solution either at the farm, wholesaler, retailer or at consumer level. (2)

[25]

TOTAL: 150

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