higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

PLANT PRODUCTION
NQF LEVEL 2

16 November 2023

This marking guideline consists of 6 pages.

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SECTION A

QUESTION 1

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

(10 × 1) (10)

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

(10 × 1) (10)

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

(10 × 1) (10)

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1.4	1.4.1	Repellent		
	1.4.2	Hydroponics		
	1.4.3	Disease resistant		
	1.4.4	Biological		
	1.4.5	Fungicide		
	1.4.6	Soil field capacity		
	1.4.7	Manual		
	1.4.8	Nutrients		
	1.4.9	Nitrogen		
	1.4.10	Secateurs		
			(10 × 1)	(10)
				[40]

TOTAL SECTION A: 40

SECTION B

QUESTION 2

2.1	2.1.1	Taproot		(1)
	2.1.2	A – primary root B – lateral root C – root hairs D – tip root E – root cap	(5 × 1)	(5)
	2.1.3	The root cap is responsible for protecting the root tip✓ against injuries when pushes down to absorb water and nutrients.✓ (Any 1)		(1)
	2.1.4	Absorb water from the soil,✓ absorb nutrients,✓ act as a storage organ for the food produced during the process of photosynthesis,✓ anchor the soil,✓ assist by the soil to stand upright.✓	(Any 4 × 1)	(4)
2.2		Angiosperm is seed-producing plants✓ that have seeds which are enclosed inside the ovule✓ *while* gymnosperm is seed-producing plants✓ which have naked seeds or their seeds are not enclosed inside the ovule.✓	(2 × 2)	(4)
2.3	2.3.1	Photosynthesis is the process of food manufacturing✓ by using sunlight.✓		(2)

2.3.2
- Enough 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 temperature deactivates 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 molecule provides hydrogen and oxygen which are used to form glucose molecules.✓ (5 × 2) (10)

2.3.3
- Light phase – Glucose
- Dark phase – Starch, cellulose (2)

2.3.4
- Trellising✓ – plants are supported using sticks or poles to make sure the leaves get as much exposure to the sun rays.✓
- Pruning✓ – shaping the plant and removing the unwanted branches to ensure that the leaf surface gets as much sunlight throughout the day.✓
- Green house✓ – create a conducive environment with bets level of water availability, allowing 85% or more of the sunlight which maximizes photosynthesis.✓
- Wide spacing✓ – all leaves of plants are exposed to the sunlight they can photosynthesise.✓
- Plant density – the number of plants within a given area.

(Any 4 × 2) (8)

2.3.5 Plants are propagated by human beings,✓ crops are irrigated,✓ crops are harvested as food for people.✓ (3)

[40]

QUESTION 3

3.1 Read instructions carefully,✓ wear protective clothing,✓ do not spray chemicals during windy periods to avoid drifting,✓ do not spray chemicals in extremely hot conditions,✓ do not spray chemicals when it is about to rain.✓ (5 × 1) (5)

3.2 Water,✓ other animals,✓ propagating materials,✓ wind✓ tools and equipment,✓ insects and human beings. Any (5 × 1) (5)

3.3 3.3.1 Weeds are unwanted plants or plants that grow where they are not supposed to.✓✓ (2)

3.3.2 Weeds use water of the cultivated crops,✓ weeds use the nutrients intended for the cultivated crops,✓ weeds can smother young plants,✓ weeds serve as a harbour for pests,✓ some weeds are harmful to human beings and animals.✓ (Any 4 × 1) (4)

3.3.3 residual,✓ systemic,✓ contact✓ (3)

3.3.4
- Residual – poison remains in the soil, when weed seeds start to germinate, they absorb water with poison and then die,✓
- Systemic – the chemical is sprayed onto the leaves, then leaves absorb poison travel down to the stem and roots,✓
- Contact – only kills the part of the plant that is in contact with or touches.✓ (3)

3.3.5
- Annual weeds – they grow, flower and seed in one production cycle or they complete their life cycle in one production period✓✓
- Perennials – plants that grow for more than a year.✓✓ (2 × 2) (4)

3.4 Root nematode,✓ foliar nematode✓ (2)

3.5 Nematodes feed themselves on the leaves and make them unattractive for marketing,✓ lay eggs inside the roots which block the vascular bundles.✓ (2)

3.6 3.6.1 To know what type of a plant to grow,✓ how much fertiliser to apply,✓ at what stages of plant growth to add fertiliser,✓ to know the texture of the soil✓ to know the pH level of the soil.✓ (5)

3.6.2 Nitrogen enhances plant growth,✓ giving a plant a healthy green colour,✓ is an essential part of living cells and a component of proteins and enzymes for metabolic processes,✓ stimulates root growth and crop development as well as uptake of other nutrients, a significant component of nucleic acids such as DNA,✓ a component of ATP,✓ the energy-transfer compound which allows cells to use the energy released in metabolism. (Any 3 × 1) (3)

3.6.3 Macro-nutrients are elements that are required by plants in large quantities such as N, P, K.✓✓ (2)

[40]

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QUESTION 4

4.1 4.1.1 Rotational cropping breaks the cycle of pests and diseases,✓✓ makes use of biological control where living organisms are used as predators,✓✓ pest and disease control can also be promoted by the selection of resistant strains of plants against pests and diseases,✓✓ sick plants should be removed and replaced by different varieties of flower plants✓✓ irrigation practices that minimising the spread of diseases. (Any 4 × 2) (8)

4.1.2 Geese (1)

4.2 4.2.1 Tomatoes – carefully twist off the stalk when the fruit is light red/pink.✓✓

4.2.2 Cabbages – harvest the cabbage when the head is firm by cutting the stem just above the soil surface.✓✓

4.2.3 Carrots – dig up the roots using a fork.✓✓

4.2.4 Onions – dig up bulbs using a fork when the leaves turned brown or when bulbs are fully grown.✓✓

(4 × 2) (8)

4.3 Harmless to human beings,✓ poisonous to all insects,✓ does not affect the taste of the grain,✓ does not affect the germination of seed grain,✓ it is flammable,✓ smells bad but disappears after some time. (Any 5 × 1) (5)

4.4 4.4.1 Proper storage of grain:✓
Fumigation:✓ (2)

4.4.2
- Stored grain must be properly dry before storing them,✓ Any residues that might cause the outbreak of weevils must be removed or destroyed,✓ storeroom must be clean, cool, and dry.
- storeroom must be fumigated by using different fumigants that will prevent insect infestation.✓ Storeroom should be well-ventilated.✓ (4)

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4.5 Should be fresh,✓ true to cultivar,✓ must have high bushel weight, free from weed seeds, free from pests and diseases, free from foreign matters.

(Any 2 × 1) (2)
[30]

TOTAL SECTION B: 110
GRAND TOTAL: 150

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