



**higher education  
& training**

Department:  
Higher Education and Training  
**REPUBLIC OF SOUTH AFRICA**

**NATIONAL CERTIFICATE (VOCATIONAL)**

**ADVANCED PLANT PRODUCTION  
NQF LEVEL 4**

(1011014)

**3 December 2020 (X-paper)  
09:00–12:00**

**This question paper consists of 10 pages.**

239Q1N2003

<p><b>TIME: 3 HOURS</b> <b>MARKS: 150</b></p>
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### **INSTRUCTIONS AND INFORMATION**

1. Answer all the questions.
  2. Read all the questions carefully.
  3. Number the answers according to the numbering system used in this question paper.
  4. Write neatly and legibly.
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**QUESTION 1**

1.1. Various possible options are given as answers to the following questions. Choose the correct answer and write only the letter (A–D) next to the question number (1.1.1–1.1.10) in your ANSWER BOOK.

1.1.1 Which tool is not used for pruning thick shoots and hedges?

- A Loppers
- B Shears
- C Secateurs
- D Pruning saws

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1.1.2 Reproduction system that does not involve fertilisation:

- A Sexual reproduction
- B Asexual reproduction
- C Mass selection
- D Pollination

1.1.3 Buds found on tip of stem where growth takes place:

- A Nodes
- B Basal buds
- C Terminal buds
- D Side buds

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1.1.4 Asexual reproduction which involves union of rootstock and a scion to form one plant

- A Layering
- B Budding
- C Trenching
- D Grafting

1.1.5 Reproduction system where offspring resembles parents:

- A Fertilisation
- B Pollination
- C Asexual reproduction
- D Sexual reproduction

1.1.6 The system of planting shoots that are cut off from the mother plant and planted to produce parent plants

- A Layering
- B Cutting
- C Hybridisation
- D Budding

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- 1.1.7 Fungal disease on plants causing leaves gradually being covered by white powdery patches:
- A Downy mildew
  - B Soft rot
  - C Powdery mildew
  - D Black spot
- 1.1.8 Hormone responsible for stimulation of cell division delaying aging and death of plants:
- A Cytokinins
  - B Gibberellins
  - C Ethylene
  - D Auxins
- 1.1.9 Plant completing its life cycle in one season:
- A Perennial
  - B Annual
  - C Hedge
  - D Climber
- 1.1.10 Characteristic of wind-pollinated plant:
- A Large amount of pollen
  - B Colourful petals
  - C Sweet smell
  - D Exposed anthers

(10 × 1) (10)

- 1.2 Choose a term from COLUMN B that matches a description in COLUMN A. Write only the letter (A–O) next to the question number (1.2.1–1.2.10) in the ANSWER BOOK.

COLUMN A		COLUMN B	
1.2.1	Cuttings taken from the bottom of certain plants	A	seradix
1.2.2	The hormone that stimulates root development	B	zygote §
1.2.3	Growing plants in water medium	C	runners
1.2.4	Plants that grow higher and are attached to a support with the help of tendrils.	D	climbers
1.2.5	The type of layering that involves the cutting of a branch which is then covered with sphagnum moss and polyethylene film.	E	tip layers
1.2.6	Part of a plant, often an underground part, from which new above- ground growth can be produced §	F	basal cuttings
1.2.7	A young shoot or twig of a plant, especially one cut for grafting	G	hydroponics
1.2.8	A thickened underground stem that grows more or less parallel to the soil.	H	perennial plants
1.2.9	Plants that live for more than two years	I	air layering
1.2.10	The type of propagation where a branch is bent forward into the ground	J	keratin
		K	rootstock
		L	rhizome
		M	stratification
		N	annual plants
		O	scion §

(10 × 1)

(10)

- 1.3 Choose the correct word(s) from those listed below to complete the following sentences. Write only the word(s) next to the question number (1.3.1 – 1.3.10) in your ANSWER BOOK.

ethylene, runners, trench layering, parasites, ventilation, bulb, apical wedge graft, nursery, tubers, dibber, cytokinesis, rhizome

- 1.3.1 The technique of grafting where the scion is fitted into a wedge cut.
- 1.3.2 This technique is used to propagate rootstocks for orchards. §
- 1.3.3 A short underground stem with several fleshy leaves in which food is stored.
- 1.3.4 A place where young plants and trees are raised for transplanting later or for the sale of seedling
- 1.3.5 The flow of air to move in and out in a nursery
- 1.3.6 Very small organisms that live on the body of the host and cause it harm §
- 1.3.7 A small hand-held tool used to make holes in the ground for planting seedlings and bulbs
- 1.3.8 The vegetative part that is used to propagate potatoes
- 1.3.9 The vegetative part that is used to propagate strawberries
- 1.3.10 A hormone that controls fruit ripening and leaf drop §

(10 × 1)

(10)  
[30]

**QUESTION 2**

2.1 Harvesting and storage techniques require particular attention because they impact seed quality.

2.1.1 A Name FOUR factors that should be considered prior to harvesting seeds (4)

B Explain why these FOUR factors should be considered. (4)

2.1.2 List FOUR methods of breaking dormancy in seeds when preparing for the planting season. (4)

2.2 Asexual propagation is an effective technique to maintain species of plants that do not root immediately.

Study the sketch below and answer the questions.

**PROPAGATION****FIGURE 1**

[Source: <https://aggie-horticulture.tamu.edu/earthkind/landscape>]

2.2.1 Name the propagation technique illustrated above. (1)

2.2.2 During which seasons can this method successfully be used? (2)

2.2.3 Describe the characteristics of the plant that has to be propagated using this method. (2)

2.2.4 Why would a black plastic bag sometimes be used to wrap the moss? (1)

2.2.5 Under which circumstances would a clear plastic bag be used to wrap the moss? Give TWO reasons. (2)

- 2.2.6 Name the type of hormone that can be used on the wound of the stem. (2)
- 2.2.7 Name TWO tools and TWO materials used for this propagation technique. § (4)
- 2.2.8 Briefly explain why each of the tools named in 2.2.7 are important in this specific propagation method. (4)
- [30]**

### QUESTION 3

- 3.1 Explain why farmers must consider the following when starting a nursery for flower production:
- 3.1.1 Market and transport (2)
- 3.1.2 Availability and skills of the work force § (2)
- 3.2 Name FIVE environmental conditions that must be considered when choosing a nursery site. (5)
- 3.3 State the factors that should be considered when using cuttings as a propagating method to ensure that the new growth is successful. (4)
- 3.4 § Why do flower growers prefer vegetative plant propagation as opposed to other techniques? (4)
- 3.5 Regular employees in a nursery are encouraged to continue with training and skills development.
- Name FIVE types of training a seasoned farmer will provide for his/her employees working in a nursery. (5)
- 3.6 Give FOUR reasons why shrubs and climbers in a nursery must be pruned at regular intervals. (4)
- 3.7 Briefly explain the importance of FOUR of the following potting soil ingredients:
- Loam soil
  - Peat
  - Coarse sand §
  - Superphosphate
  - Agricultural lime
- (4 × 1) (4)
- [30]**



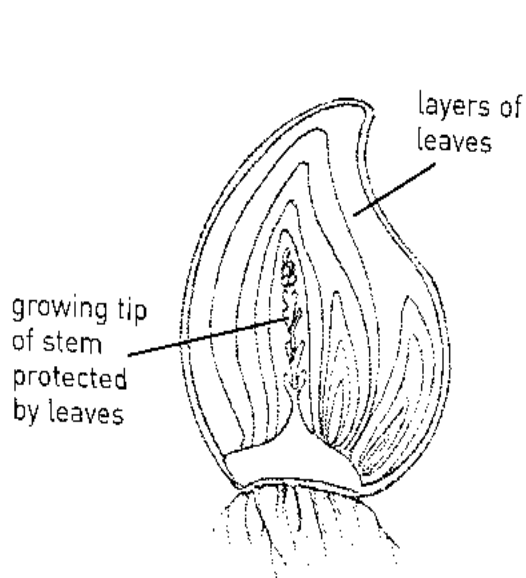
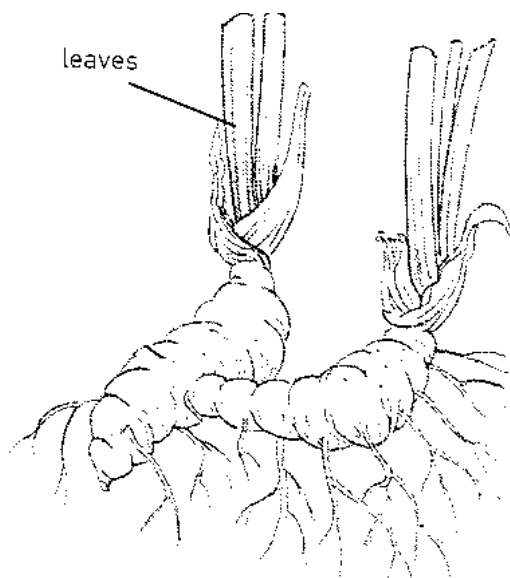
**QUESTION 4**

- 4.1 Farmers can use a variety of propagation techniques to increase the number of plants in a nursery.
- 4.1.1 List FIVE different methods of propagating plants. § (5)
- 4.1.2 Briefly explain each the propagating methods named in QUESTION 4.1.1 (5)
- 4.2 Why would the production of cut flowers for the fresh-flower market be more feasible in an urban situation? (4)
- 4.3 Pure sand can be used as a rooting medium for cuttings, but a mixture of sand and peat moss is way better.
- Discuss this statement. (4)
- 4.4 Explain the difference between biological control of insects and integrated pest management? (2)
- 4.5 4.5.1. What is vermiculture? § (1)
- 4.5.2 What are the advantages of using this medium for growing of flowers? (2)
- 4.6 Soft rot can cause severe losses to flower producers.
- 4.6.1 Which part of the flowering plant is mostly affected by soft rot? (1)
- 4.6.2 Describe the symptoms of soft rot? (1)
- 4.6.3 What measures can flower growers use to control soft rot? (2)
- 4.7 Different types of containers are used by flower producers to grow flowers. Why would growers use potting bags in a nursery? § (3)

**[30]****QUESTION 5**

- 5.1 Nurseries use a lot of water and the quality of water is crucial as salt water can cause major problems in plant growth.
- State FOUR factors that determine the water needs of plants in a nursery. (4)
- 5.2 Sub-irrigation is one method of watering plants in a nursery. §
- Name THREE other methods of irrigation which may be used. (3)

- 5.3 List FIVE factors that should be considered before deciding on a watering method. (5)
- 5.4 Give TWO advantages and TWO disadvantages of sub-irrigation system. § (4)
- 5.5 Study FIGURE 2 and 3 and answer the questions.

**FIGURE 2****FIGURE 3**

[Source: Advanced Plant Production NQF level 4:2008]

- 5.5.1 Identify the reproductive structures in FIGURE 2 and 3. (2)
- 5.5.2 Name TWO examples of flowering plants that can be produced using FIGURE 2. § (2)
- 5.5.3 Name any TWO examples of flowering plants that can be produced using FIGURE 3. (2)
- 5.6 Why is soil on its own considered undesirable as a planting medium when using plant containers in a nursery? (3)
- 5.7 Name FIVE types of data regarding the production of plants that must be recorded in a nursery. § (5)

**TOTAL:**

**[30]  
150**