



# higher education & training

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

## **NATIONAL CERTIFICATE (VOCATIONAL)**

### **ADVANCED PLANT PRODUCTION NQF LEVEL 4**

(1011014)

**12 November 2018 (Y-Paper)  
13:00–16:00**

**This question paper consists of 8 pages.**

**TIME: 3 HOURS  
MARKS: 150**

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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 Complete the following sentences by filling in the missing word(s). Write only the word(s) next to the question number (1.1.1–1.1.10) in the ANSWER BOOK.

1.1.1 ... are the most popular propagation technique used for grape cultivars and perennial shrubs.

1.1.2 Runners are side shoots with very long ...

1.1.3 A ... is a fertilised ovum.

1.1.4 The ... is the part of an embryo between the cotyledons and the radical.

1.1.5 The substrate like soil, in which a plant grows, is called a ...

1.1.6 ... is an artificial way of watering crops or plants when there is not enough natural water from rain.

1.1.7 Fungi cannot produce its own food because it has no ... .

1.1.8 The plant which is infected with a virus or parasite is called the ...

1.1.9 Botrytis is an example of a ... disease.

1.1.10 ... cuttings are short lengths of young stems cut cleanly just below a bud.

(10 × 1) (10)

1.2 Differentiate between the following:

1.2.1 Humus and mulch

1.2.2 Fresh and container flowers

1.2.3 Stratification and scarification

1.2.4 Corm and rhizome

1.2.5 Dormant and vigorous

(5 × 2) (10)

- 1.3 Choose an item from COLUMN B that matches a description in COLUMN A. Write only the letter (A–O) next to the question number (1.3.1–1.3.10) in the ANSWER BOOK.

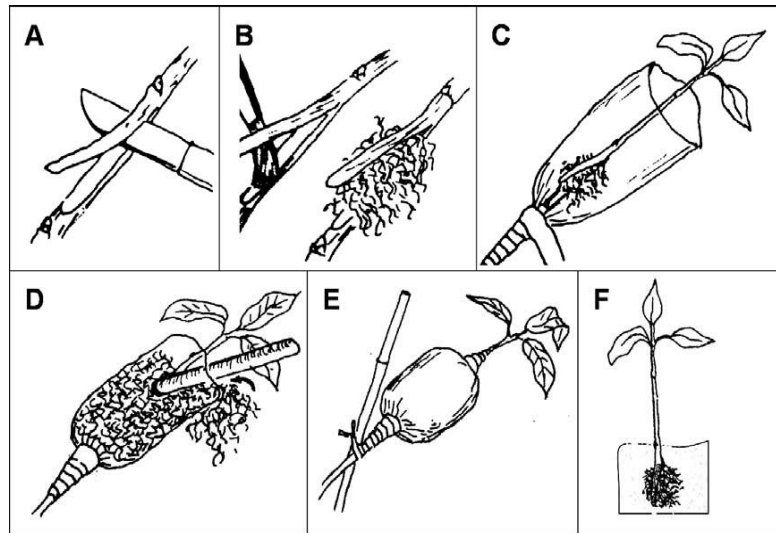
COLUMN A		COLUMN B	
1.3.1	The type of grafting done indoors, such as in a greenhouse or shed	A	broadcast seeding
1.3.2	Able to continue for a long time	B	radical
1.3.3	Pieces of leaves, stems or roots that have been taken from a plant for propagation purposes	C	hydroponics
1.3.4	The first root of the germinating seed	D	row planting
1.3.5	Seeds are spread across a field, like a blanket	E	bench grafting
1.3.6	The different stages of development that pests go through	F	cocoon
1.3.7	A silky case that a caterpillar makes to protect itself as pupae	G	field grafting
1.3.8	Seed like structures produced by fungi	H	sustainable
1.3.9	A large stand of only one type of planted crop	I	life cycle
1.3.10	Plants growing in a water medium	J	mound layering
		K	spores
		L	cambium
		M	nutritious
		N	cuttings
		O	monoculture

(10 × 1)

(10)  
[30]

**QUESTION 2**

- 2.1 Layering is one of the simplest vegetative propagation methods available to farmers. Carefully study FIGURE 1 and answer the questions that follow.

**FIGURE 1***Source: Internet*

- 2.1.1 Identify the type of layering illustrated above. (1)
- 2.1.2 Define the type of layering identified in 2.1.1 (3)
- 2.1.3 Briefly explain the procedure of conducting the above technique under the following subheadings:
- Tools and materials required (5)
  - Preparations (2)
  - Give a step-by-step account of the grafting procedure illustrated above. (6)
  - Name FOUR precautionary measures that should be taken into account when carrying out this type of propagation? (4)
  - What will the indicators of an unsuccessful propagation be? (3)
- 2.2 Auxins and cytokines are used as growth stimulators on cuttings.
- 2.2.1 On which type of cutting is each stimulant normally used?
- 2.2.2 Provide a reason for applying each.
- 2.2.3 How can one minimise water loss of cuttings while working with it? (3 × 2) (6)

**[30]**

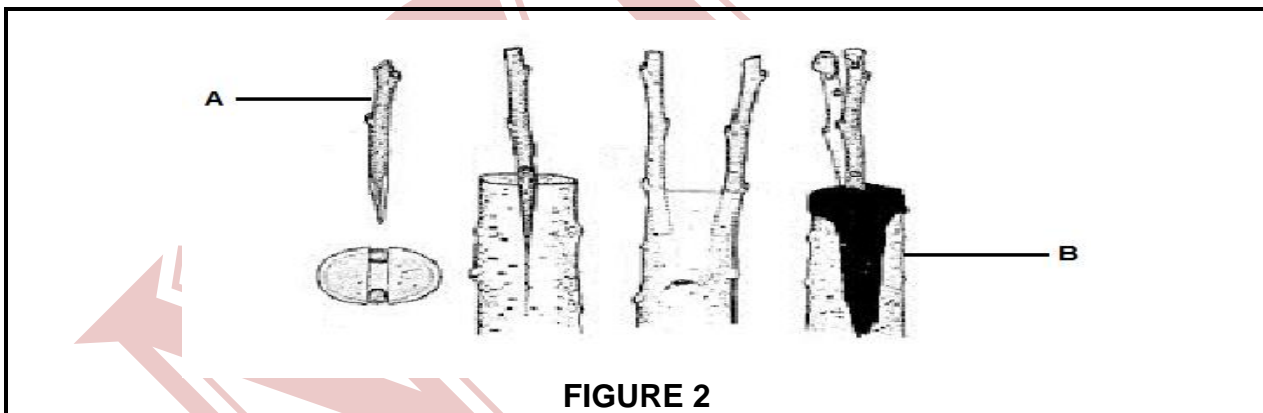
**QUESTION 3**

- 3.1 It is important that new farmers understand the different types and applications of plant propagation. Give a clear distinction between a grafting, budding, layering and cuttings. (4)
- 3.2 Trench layering is one of the propagation techniques used by commercial growers to propagate rootstocks for an orchard. Describe how trench layering is done. (5)
- 3.3 Briefly explain how the following environmental conditions will affect plant propagation:
- 3.3.1 Humidity
- 3.3.2 Moisture
- 3.3.3 Temperature

(3 × 2)

(6)  
[15]**QUESTION 4**

Study FIGURE 2 below and answer the questions that follow.

**FIGURE 2**

[Source: Internet]

- 4.1 Identify the propagation technique illustrated above. (1)
- 4.2 When is the best time to apply the illustrated technique? (1)
- 4.3 What are the parts marked A and B called? (2)
- 4.4 What qualities should the parts marked A and B have to ensure a successful graft? (4)
- 4.5 Why is grafting or budding often used to propagate shrubs and fruit trees? (7)
- 4.6 Provide THREE reasons why the grafted part must be wrapped in grafting tape. (3)

- 4.7 What type of cutting will suit the propagation of sugar cane? (1)
- 4.8 What type of grafting will be considered for apples and pears? (1)
- [20]**

### QUESTION 5

- 5.1 A well-managed nursery is key to producing quality products and reducing costs. With, proper planning and commitment, increased profit margins can become a reality.
- 5.1.1 Compile a list of operational practices that one should check on a daily basis in a nursery. (6)
- 5.1.2 What are the reasons for sowing seeds in trays and pots? (2)
- 5.1.3 Why should seed trays have holes at the bottom? (2 × 1) (2)
- 5.1.4 What are the physical requirements for the young growing seedlings? (4)
- 5.2 Over-watering of plants in containers can cause as much trouble as under-watering.
- Explain how seasons will influence the water requirements of container plants. (2)
- 5.3 A farmer wants to purchase a growth medium from one of the leading suppliers. What are the main characteristics of the growth medium that the farmer should consider before making a decision? (4)
- [20]**

### QUESTION 6

- 6.1 Pests cause widespread damage to flowering plants.
- 6.1.1 Give an example of insect pests that feed in each of the following manners:
- (a) Pierce leaves and suck out juices (1)
- (b) Bite and eat plant tissue (1)
- 6.1.2 Chemicals for controlling pests can be sprayed onto plants and these chemicals work in different ways. Distinguish between systemic and contact pesticides. (4)
- 6.1.3 Name SIX precautionary measures that need to be followed when applying pesticides to flowers in a nursery. (6)
- 6.2 Why is it important to keep a record of pest monitoring data? (3)
- [15]**

**QUESTION 7**

Plant diseases can be classified as either infectious or non-infectious.

- 7.1 Give TWO examples of non-infectious diseases in plants. (2)
- 7.2 Bacterial diseases that affect plants are often carried internally and only the symptoms are noticeable and recognisable.
- What symptoms indicate the typical presence of a bacterial disease in plants? (4)
- 7.3 Which parts of the plant are mostly affected by bacterial diseases? (2)
- 7.4 What is the best way to deal with virus infected plants? (2)
- [10]**

**QUESTION 8**

In order for farmers to increase their economic stability, cut flowers are often exported.

- 8.1 Describe the ideal characteristics of cut flowers that need to be picked for the market. (2)
- 8.2 What is meant by *culling* as used during postharvest operations of cut flowers before they are transported to the market? (1)
- 8.3 List the market requirements used for sorting and grading flowers to meet market standards. (5)
- 8.4 Cool storage and packaging are important factors that need to be considered when transporting cut flowers to the market. Briefly explain the importance of meeting these standards. (2)
- [10]**

**TOTAL: 150**