higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

ADVANCED PLANT PRODUCTION
NQF LEVEL 4

(1011014)

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DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)
ADVANCED PLANT PRODUCTION
NQF LEVEL 4
TIME: 3 HOURS
MARKS: 150

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. Use only a black or blue pen.
5. Write neatly and legibly.

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QUESTION 1

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

1.1.1 When propagating by means of asexual reproduction a farmer uses a … and a rootstock.

A seed
B pollen
C bud
D scion

1.1.2 The style of a nursery that is commonly built by farmers:

A Uneven span
B Ridge and valley
C Lean-to
D Even span

1.1.3 Perennial shrubs are commonly propagated by means of …

A runners.
B slips.
C nodes.
D terminal buds.

1.1.4 … are done when the wood is firmer and riper than any other cuttings.

A Basal cuttings
B Tip cuttings
C Half-ripe cuttings
D Hardwood cuttings

1.1.5 … use biological and cultural means to prevent pests and diseases.

A Integrated pest management
B Integrated theory of management
C Integrated scientific management
D Mechanical and natural methods

1.1.6 In the asexual reproduction in plants …

A an egg and a sperm cell are produced.
B the parent and the progeny are identical.
C seeds are produced.
D pollen is released.

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1.1.7 … is a plant hormone that is responsible for suppressing growth.

A Gibberellins
B Cytokinins
C Abscisic acids
D Auxins

1.1.8 … is the propagation method used to propagate plants that are difficult to root.

A Mound layering
B Air layering
C Tip layering
D Trench layering

1.1.9 The plant hormone that delays plant aging and death:

A Cytokinesis
B Gibberellins
C Auxins
D Ethylene

1.1.10 … is a fungal disease that causes leaves to become gradually covered by whitish patches.

A Downy mildew
B Soft rot
C Powdery mildew
D Black rot

(10 × 1) (10)

1.2 Complete the following sentences by writing only the missing word or words next to the question number (1.2.1–1.2.10) in the ANSWER BOOK.

1.2.1 Many plants produce easily detachable shoots, also known as…

1.2.2 … are rooted shoots produced by succulents.

1.2.3 The … is an underground stem in a potato that stores food.

1.2.4 … cuttings are short lengths of young stems cut cleanly below the bud.

1.2.5 … is a type of propagation technique favoured by fruit and flower growers.

1.2.6 … irrigation is a method of supplying water and nutrients to plants from below the surface.

1.2.7 The cutting that is normally done when woody plants are dormant is called …

1.2.8 … cuttings can be taken from the shoots sent up from the base of certain plants.

1.2.9 The area where water running over leaves, falls on the ground around the plant, is called a …

1.2.10 … layering is commonly used to propagate orchards.

(10 × 1) (10)

1.3 Give a term for each of the following descriptions by writing only the answer next to the question number (1.1–1.10) in the ANSWER BOOK.

1.3.1 A grey mould on grapes or berries that is formed by a fungal disease

1.3.2 An artificial environment where seeds are grown to be sold as seedlings at a later stage

1.3.3 Mineral elements that are necessary in very small quantities.

1.3.4 A propagation technique that can produce a radical change in the size, nature, habit, adaptation and disease-resistance of the rootstock or scion

1.3.5 A plant regulator, such as auxins, that help the plant to tolerate environmental stress

1.3.6 Decayed manure, leaf mould, peat, wet straw or sawdust that is used to cover the surface of the soil

1.3.7 The practice of putting seeds in a refrigerator with the purpose of speeding or delaying germination

1.3.8 The practice of damaging the seed coat enough to allow water to enter.

1.3.9 A system in a nursery that allows air to move in and out.

1.3.10 A practice of soaking or dipping seeds in a chemical to prevent insect damage to the seed.

(10 × 1) (10)

[30]

QUESTION 2

2.1 Copy the following table in the ANSWER BOOK and complete it by comparing *insect-pollinated flowers* with *wind-pollinated flowers*. Give a brief description in each space.

		INSECT-POLLINATED FLOWERS	WIND-POLLINATED FLOWERS
2.1.1	Petals		
2.1.2	Stamens		
2.1.3	The pollen		
2.1.4	Shape of flower		

(4 × 2) (8)

2.2 FIGURE 1 below shows various methods of plant propagation:

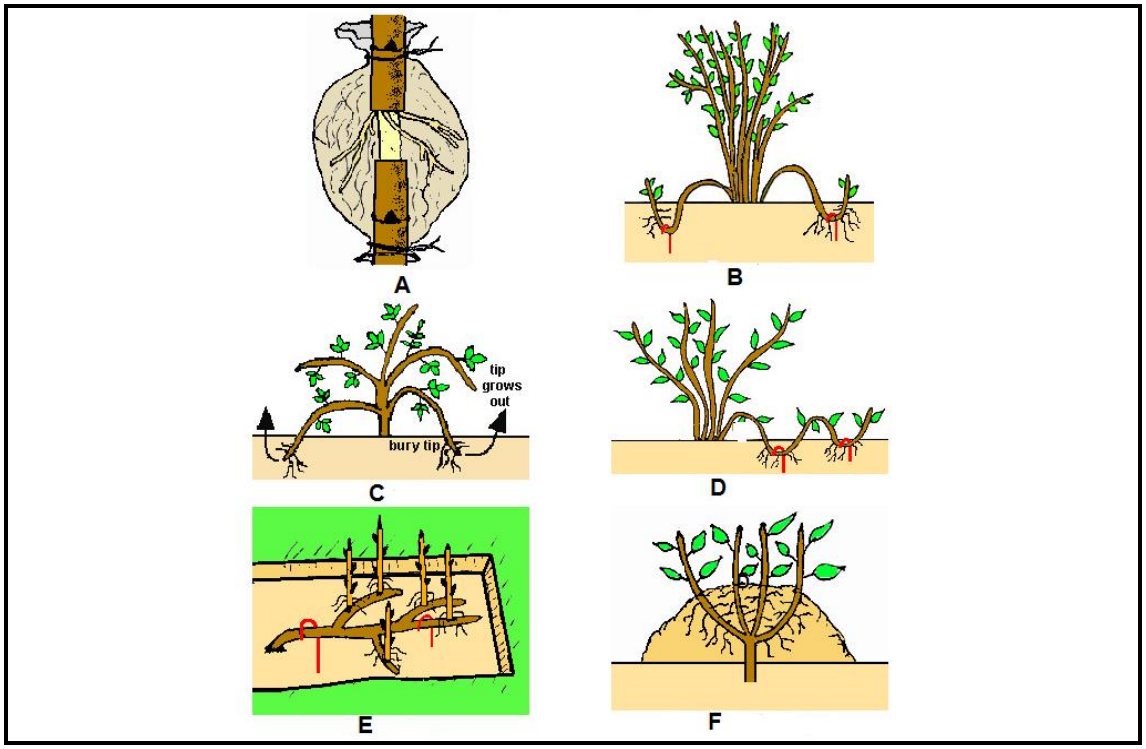

FIGURE 1

2.2.1 What general type of plant propagation is illustrated in FIGURE 1? (1)

2.2.2 Name the specific types of propagation indicated by writing the answer next to the letter (A–F) in the ANSWER BOOK. (6 × 1) (6)

2.2.3 State FIVE advantages of the type of plant propagation you mentioned in QUESTION 2.2.1. (5)

2.2.4 State FIVE environmental factors that are necessary for rooting the type of plant illustrated in FIGURE 1 above. (5)

[25]

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QUESTION 3

3.1 3.1.1 Briefly explain the concept *flower cultivar.* (3)

3.1.2 List FOUR desirable characteristics which may be of economic importance to a flower producer. (4)

3.1.3 Name FOUR propagating methods that can be used to achieve or maintain the desirable characteristics in a flower cultivar. (4)

3.2 Plant hormones play a crucial role in plant growth and development.

3.2.1 What is the main role of natural auxin in plants? (2)

3.2.2 Which plant hormone can be used to produce seedless fruit? (1)

3.2.3 How does parthenocarpy differ from normal fruit? (1)

3.3 Transplanting plants is a delicate procedure which can be unsuccessful if it is not done properly.

State EIGHT factors and or procedures that have to be considered when transplanting. (8)

3.4 Provide TWO reasons why it is necessary to monitor transplanted plants daily. (2)

[25]

QUESTION 4

4.1 As we become more aware of the importance of responsible farming, methods to reduce the use of synthetic pesticides play a bigger part in the crop protection programmes.

Plant health, *building up a population of beneficial organisms*, *monitoring pest populations* and *nursery hygiene* are the main features of an integrated pest management (IPM) approach used to manage pests.

Briefly explain how each of these features can be applied to IPM. Choose any THREE. (Any 3 × 2) (6)

4.2 Weeds that grow along agricultural crops impact negatively on farming activities.

State why it is so important to keep weeds out of the field where crops are grown. (5)

4.3 State the best TWO stages of growth at which weeds should be destroyed. (2)

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4.4 Herbicides are known as weed killers that are used to control undesired plants.

4.4.1 What is the best season to spray a weed killer? (1)

4.4.2 Give ONE reason why weed killers must be sprayed in the season you mentioned in QUESTION 4.4.1. (2)

4.4.3 Name THREE types of weedicides. (3)

4.5 During your work in a nursery during a WBE (workplace-based experience), the manager asks you to prune nursery plants.

Give FOUR reasons why it is necessary to prune plants. (4)

4.6 Distinguish between moderate and light pruning. (2)
[25]

QUESTION 5

5.1 There are several symptoms of deficiencies that show on plant leaves, stems and flowers that are not caused by pests or diseases.

Name the following that can result in plant deficiencies:

5.1.1 TWO human factors (2)

5.1.2 THREE environmental factors (3)

5.2 The following list contains examples of plant diseases and symptoms of these types of diseases.

Copy the table below in the ANSWER BOOK and complete it by choosing from the list ONE disease for each column and TWO symptoms that are a result of a fungal and a bacterial disease for each column.

For example:
ONE example of a virus – mildew
TWO examples of symptoms - discolouration of the leaves and rooting of roots

canker, sooty moulds; leaf curl; powdery mildew; mottling; botrytis; leaf spots, mosaic; specks and blights; spores

	FUNGAL DISEASE	BACTERIAL DISEASE
Causing organism	ONE example of a disease (1)	ONE example of a disease (1)
	•	•
Symptoms	TWO examples of symptoms (2)	TWO examples of symptoms (2)
	• •	• •

(2)

(4)

5.3 Crops should regularly be inspected and monitored for insects and diseases. Briefly explain why it is necessary. (3)

5.4 As a manager on a farm you will be responsible for the successful production of plants. Plants infected with viruses exhibit a variety of symptoms and may be difficult to diagnose unless one is familiar with the symptoms associated with the virus.

5.4.1 List any THREE symptoms of a plant that is infected with a viral disease. (3)

5.4.2 How can the spread of a viral disease be prevented in a nursery. Name THREE good hygiene measures (3)
[20]

QUESTION 6

6.1 The responsibility of a flower producer is to ensure economic success of the business through a variety of management practices. Symptoms caused by pests and diseases often appear at a very late stage; therefore prevention is often better than cure.

Identify FIVE agricultural practices that can be used to control pests and insects. (5)

6.2 Nurseries are prone to pests and diseases and if unchecked they will lower productivity and profitability.

Name FIVE daily management practices that should be carried out in a nursery (5)

6.3 Name FOUR types of data that should be kept when producing flowers in a nursery. (4)

6.4 Flowers remain alive even after a harvest and continue their metabolic activities.

State FIVE factors that affect post-harvest quality and the shelf life of flowers. (5)

6.5 Briefly explain each of the following post-harvest activities that will improve the shelf life and quality of cut flowers:

6.5.1 Precooling

6.5.2 Cold storage

6.5.3 Holding

(3 × 2) (6)
[25]

TOTAL: 150

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