



**higher education
& training**

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

**PLANT PRODUCTION
NQF LEVEL 3**

(1011013)

**14 November 2019 (X-Paper)
09:00–12:00**

This question paper consists of 8 pages.

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. Start each section on a NEW page.
 5. Use only BLUE or BLACK ink.
 6. Write neatly and legibly.
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SECTION A**QUESTION 1**

1.1 Complete the following sentences by writing the missing word or words next to the question number (1.1.1–1.1.10) in the ANSWER BOOK.

1.1.1 ... is the preparation of soil by mechanical means, such as digging, stirring and overturning. 

1.1.2 The application of fertilizers and other water-soluble products into an irrigation system is called ...

1.1.3 ... refers to the stage harvesting that includes cleaning, cooling, sorting and packing.

1.1.4  A land-use management system in which trees or shrubs are grown around or among crops, or pastoral land is called ...

1.1.5 ... is the hard layer of soil that forms as a result of pressure on the soil exerted by machinery.

1.1.6 The type of liquid manure produced by combining animal wastes with water is known as ...

1.1.7 ... refers to the plant the insect or disease depends on.

1.1.8 ... is a method of identifying the insects present in the fields in order to determine which ones are or may become a problem.

1.1.9 ... is that part of the plant that remains above the ground and is still attached to the root after the rest of the plant has been cut off.

1.1.10 ... control is a type of pest control that uses the natural enemies of plant pests.



(10 × 1) (10)

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

COLUMN A		COLUMN B	
1.2.1	An animal that hunts and eats other animals 	A	soil field capacity
1.2.2	Ploughing without disturbing the soil ecosystem	B	drip irrigation
1.2.3	Gathering ripe crops from the field	C	soil cultivation
1.2.4	Shoots that are used to form a graft	D	erosion
1.2.5	The amount of water the soil can hold	E	harvesting
1.2.6	A nutrient that is required in large amounts for proper growth and reproduction	F	magnesium
1.2.7	A chemical substance used to destroy insects	G	baits
1.2.8	The type of micro-irrigation system that saves water and nutrients	H	predator 
1.2.9	The gradual removal of soil by water or wind 	I	repellent
1.2.10	Any substance used to attract prey	J	scion
		K	zero tillage
		L	pesticides
		M	rootstock
		N	secondary tillage
		O	nitrogen
		P	fungicides

(10 × 1) (10)

1.3 Indicate whether the following statements are TRUE or FALSE. Choose the answer and write only 'True' or 'False' next to the question number (1.3.1–1.3.10) in the ANSWER BOOK.

1.3.1 The use of natural enemies to control plant pests is known as physical control.

1.3.2 Dust formulations may be chosen where water is scarce.

1.3.3 Organisms that carry diseases are known as parasites. 

1.3.4 Orange Dog is the name of a caterpillar that feeds on young trees, especially on the young leaves.

1.3.5 The number of sunshine hours determines the growth of a plant, depending on its type.

1.3.6 The plant's stage of growth, health and nutritional status can influence water consumption. 

1.3.7 Flood irrigation can be used even if the land is uneven.

1.3.8 A tension meter measures the amount of water in the soil as exerted by the roots of a plant.

1.3.9 A trellis is a vertical framework to which the shoots or branches of a tree or vine are attached.

1.3.10 Interplanting is the distance along which trees and crops meet.

(10 × 1) (10)

1.4 Define each of the following terms:

1.4.1 Reproduction

1.4.2 Cutting

1.4.3 Node 

1.4.4 Cross pollination

1.4.5 Mass selection

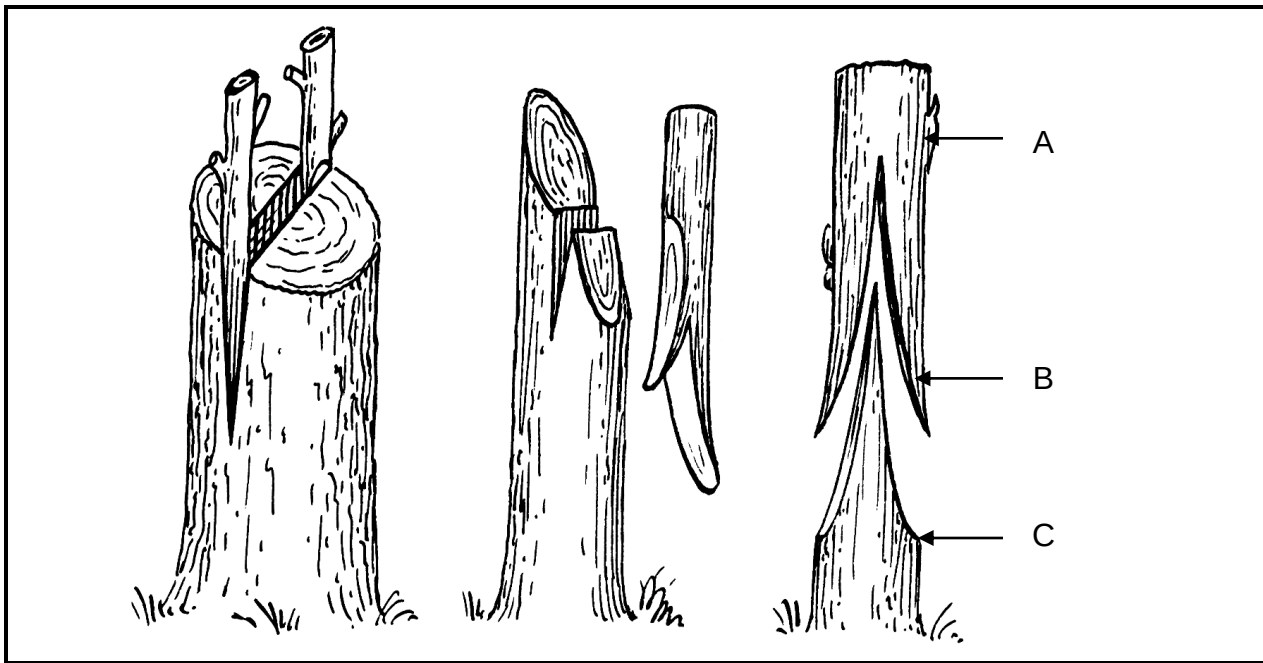
(5 × 2) (10)
[40]

TOTAL SECTION A: 40

SECTION B

QUESTION 2

2.1 Study FIGURE 1 below and answer the questions.



[Source: /search?q=+meaning&rlz=1C1CHBD_enZA744ZA]

FIGURE 1

- 2.1.1 Identify the propagation technique illustrated in the figure above. (1)
- 2.1.2 Briefly explain how the propagation technique illustrated above is done. (5)
- 2.1.3 Name TWO tools or equipment that is necessary to apply this type of propagation technique. (2)
- 2.1.4 Name the part marked A and C. (2)
- 2.1.5 Name the type of graft marked B.  (1)
- 2.1.6 From which parts of the plant is part A and C taken? (2)
- 2.2 Disease can be any departure from normal healthy growth. Plant diseases are caused by different organisms.
- 2.2.1 Define the term *pathogen*. (2)
- 2.2.2 Name TWO disease-causing organisms. (2)
- 2.2.3 What are the typical symptoms of each disease causing organisms named in QUESTION 2.2.2 above? Give TWO symptoms of each. (4)
- 2.2.4 The damage caused by diseases on plants can be described in three different ways, namely, systemic, topical and virulent.  (3)
- Briefly explain how a plant is affected in each of these ways.

2.2.5 Plants differ in their resistance to pathogens.

Differentiate between the following:

(a) Immune



(b) Tolerant

(c) Susceptible

(3 × 1)

(3)

2.2.6 (a) What is a physiological plant disease?

(1)

(b) Give TWO examples of physiological defects on a plant.

(2)

[30]

QUESTION 3

3.1 Vegetables are tender, edible crops that can be harvested when they are fully-grown for the best yield.

Complete the table below by writing only the word(s) or sentence(s) next to the question number (3.1.1–3.1.5) in the ANSWER BOOK.



TYPE OF VEGETABLES	METHOD OF HARVESTING
Carrots	3.1.1
Cabbage	3.1.2
	Ideal time for harvesting
Beans	3.1.3
Tomatoes	3.1.4
Onions	3.1.5

(5)

3.2 Harvesting is an important process in creating income on a farm.

3.2.1 Identify FIVE planning stages for harvesting fruits.

(5)

3.2.2 Name EIGHT factors that should be considered when using equipment for harvesting fruits.



(8)

3.3 Grains such as wheat, rice, cowpea and maize are staple foods for many people and can be stored for longer periods than other fresh produce.

3.3.1 Name THREE factors that can influence the amount of damage to stored grains.

(3)

- 3.3.2 State FIVE aspects that should be borne in mind when storing grain.  (5)
- 3.3.3 Name FOUR properties of carbon disulphide that is mostly used as a fumigant when storing grain crops. (4)
- [30]**

QUESTION 4

- 4.1 Some farmers do not plan crop rotation and practise monoculture for reasons best known to them.
- 4.1.1 Differentiate between monoculture and *crop rotation*. (4)
- 4.1.2 Name FIVE negative effects of monoculture. (5)
- 4.1.3  State SIX factors that should be considered when a farmer plans a crop rotation programme. (6)
- 4.2 Soil can be prepared in different ways but this is usually done with tractors and the application of different tillage practices.
- 4.2.1 State THREE aims of soil cultivation. (3)
- 4.2.2 State FOUR disadvantages of bare cultivation. (4)
- 4.2.3 State THREE advantages of mulching the soil.  (3)
- [25]**

QUESTION 5

When considering the germination and growth of plants, the fertility of the soil or growing medium is important.

- 5.1 State FIVE general principles that should be kept in mind when sowing seeds by referring to the seed and the growing medium. (5)
- 5.2 State FOUR conditions that need to be met when preparing the seedbed for seeds to be sown.  (4)
- 5.3 Identify ALL the aspects that need the attention of the farmer when preparing a seedbed for cultivating seedlings. (10)
- 5.4 Briefly describe how and when seedlings should be transplanted from seedling trays to the planting site. (6)
- [25]**

TOTAL SECTION B: 110
GRAND TOTAL: 150