higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

PLANT PRODUCTION
NQF LEVEL 3

(1011013)

3 March 2020 (X-paper)
09:00–12:00

This question paper consists of 8 pages.

233Q1S2003

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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 question on a new page.
5. Use only a blue or a black pen.
6. Write neatly and legibly.

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SECTION A

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 Propagation using the vegetative part of plant:

A Sexual reproduction
B Artificial reproduction
C Asexual reproduction
D Self-pollination

1.1.2 Underground stem where fleshy leaves develop:

A Cuttings
B Rhizomes
C Bulbs
D Tubers

1.1.3 ONE of the following is a tuberous crop:

A Cassava
B Soybeans
C Sorghum
D Sisal

1.1.4 Production system primarily designed to reflect the economic and environmental conditions of a specific area:

A Agroforestry
B Silvo-pastoral
C Hydroponics
D Crop rotation

1.1.5 A/An … is a plantation of fruit trees not necessarily producing the same fruit.

A vine
B vineyard
C orchard
D greenhouse

1.1.6 Crossing that takes place in nature in an uncontrolled way:

A Purposeful crossing
B Random crossing
C Isotope crossing
D Cross breeding

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1.1.7 Crop residue after harvesting:

A Trash
B Ratoon
C Host
D Mulch

1.1.8 Covering soil to prevent weed growth, water loss and overheating:

A Composting
B Cover cropping
C Intercropping
D Mulching

1.1.9 Trials conducted on farms where there is no irrigation of crops, only rainfall:

A Mean yield
B Cultivar trials
C Experimental farm
D Dry land trials

1.1.10 Exceptional vigour of an organism through crossbreeding between two different types:

A Heterosis
B Vigorous
C Hybridisation
D Genetic change

(10 × 1) (10)

1.2 Indicate whether the following statements are TRUE or FALSE by writing only 'True' or 'False' next to the question number (1.2.1–1.2.10) in the ANSWER BOOK.

1.2.1 Genetic modification involves a special technology in which a plant is modified by introducing genes from a different plant.

1.2.2 Agroforestry requires the planting of trees to form part of an integrated farming system.

1.2.3 Monoculture refers to growing two or more crops in an area.

1.2.4 The planting of trees in widely spaced rows with a companion crop grown in alleyways between the rows is known as silvo-pastoral.

1.2.5 Organisms causing infections when they feed on plants are known as parasites.

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1.2.6 pH fluctuation, nutritional deficiencies and moisture fluctuation are examples of nonpathogenic factors.

1.2.7 Orange dog is a disease affecting tomatoes.

1.2.8 Ground dusting granules are spread directly onto the soil surface.

1.2.9 Soil treatment encourages pests to destroy crops and also attracts pests by smell.

1.2.10 Crop rotation decreases the source of food for pests and limits their increase.

(10 × 1) (10)

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

COLUMN A		COLUMN B	
1.3.1	Bacterial disease	A	pathogen
1.3.2	Ability to endure infection by a pathogen without showing many symptoms	B	IPM
		C	susceptible
1.3.3	Disease-causing agent	D	lure
1.3.4	Use of natural enemies to control pests	E	physical control
		F	leaf scald
1.3.5	Monitoring is done to detect any sign of pests	G	scouting
1.3.6	Ability of an organism to attract insects	H	tolerant
		I	biological control
1.3.7	Ability of a pest to tolerate the presence of a chemical	J	vector
1.3.8	Inability of plant to resist infection by pathogen	K	leaf
		L	resistance
1.3.9	Relationship between two organisms	M	red scale
1.3.10	Combination of various methods to control pest	N	symbiotic
		O	saprophyte

(10 × 1) (10)

[30]

TOTAL SECTION A: 30

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SECTION B

QUESTION 2

2.1 An integrated approach to plant protection should be done in such a way that different methods supplement one another.

2.1.1 Give THREE examples each of biological and cultural control methods of plant pests. (6)

2.1.2 Briefly explain each of the chemical spraying methods below.

(a) High-volume spraying

(b) Low-volume spraying

(c) Ultra-low-volume spraying

(d) Aerial spraying

(4 × 2) (8)

2.2 Spacing plays an important role when planting crops.

2.2.1 Differentiate between *intra-row* and *inter-row* spacing. (2)

2.2.2 Name FIVE factors that determine the spacing of crops. (5)

2.2.3 Briefly explain the advantages of wider spacing in plant growth. (5)

2.3 What are the qualities of a good cultivar? (5)

2.4 The quality of plants can be affected by deficiencies or diseases.

2.4.1 Differentiate between *plant deficiencies* and *plant diseases*. (2)

2.4.2 Give ONE example of each of the above differences. (2)

[35]

QUESTION 3

3.1 Farmers generally harvest fruit when it is ripe and mature.

3.1.1 Name THREE indicators of ripeness. (3)

3.1.2 Give THREE examples of fruit ready for picking but not always ready to be eaten. (3)

3.1.3 Name TWO consequences of harvesting at the wrong time of the day or season. (2)

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3.2 Farmers prefer using seed trays to grow plants and later transplant them to a seedbed, containers, open land or to any other open space that may be available.

3.2.1 What is the advantage of using seed trays? (3)

3.2.2 State the characteristics of a good growth medium. (4)

3.2.3 What type of irrigation system can be used for seed trays? (2)

3.2.4 What is the advantage of using the irrigation method in QUESTION 3.2.3? (3)

3.3 Plant cultivars should be adapted to the conditions in which they should grow.

3.3.1 Define *cultivar.* (2)

3.3.2 State FIVE cultivar characteristics that should be present in plants selected for an agroforestry system. (5)

3.4 Agroforestry practices are intentional combinations of trees with crops and/or livestock which involve intensive management of the interactions between the components as an integrated agro-ecosystem.

State FOUR advantages and disadvantages of an agroforestry system.

(4 × 2) (8)

[35]

QUESTION 4

4.1 Post-harvest treatment of farm produce is very important to reduce possible losses. Briefly describe how the following fruit/fruit trees should be treated to reduce the post-harvest decay of fruit.

4.1.1 Pineapples (3)

4.1.2 Papaya (3)

4.1.3 Mango (2)

4.1.4 Grapes (3)

4.2 Fruit and timber trees are usually propagated asexually by using parts of the parent plant such as cuttings, rootstocks, scions and buds.

4.2.1 Differentiate between *sexual* and *asexual* reproduction. (4)

4.2.2 Why is careful selection of rootstocks and scions important when propagating by grafting? (5)

4.2.3 What are the qualities of good cuttings? (5)

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QUESTION 5

5.1 Complete the table by writing only the answer next to the question number (5.1.1–5.1.6) in the ANSWER BOOK.

COLUMN A VEGETABLE	COLUMN B DISEASE	COLUMN C SYMPTOMS
Cabbage	5.1.1 …	Part of leaves turning yellow or light green and dying
Potato	Mosaic virus	5.1.4 …
Tomato	5.1.2 …	Stems of young seedlings rot just above the ground level. The plants fall over and die
Tomato	5.1.3 …	Dried-out, dark, black areas on leaves spreading to stem
Onion	Downy mildew	5.1.5 …
Beans	Rust	5.1.6 …

(6 × 2) (12)

5.2 Pathogenic diseases are caused by infectious agents, while non-pathogenic diseases are caused by abiotic agents.

List FOUR causes of non-pathogenic diseases. (4)

5.3 Plant diseases can be controlled by using chemicals.

Name THREE other measures to control pests and plant diseases. (3)

5.4 Crop rotation means growing different types of crops in the same area in sequential seasons.

5.4.1 Name THREE advantages of crop rotation. (3)

5.4.2 Identify THREE disadvantages of crop rotation. (3)

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TOTAL SECTION B: 120
GRAND TOTAL: 150

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