higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

PLANT PRODUCTION
NQF LEVEL 2

(1011012)

2 March 2020 (X-paper)
09:00–12:00

This question paper consists of 8 pages.

187Q1S2002

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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. Write neatly and legibly.

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QUESTION 1

1.1 Indicate whether the following statements are TRUE or FALSE. Choose the answer and write only 'True' or 'False' next to the question number (1.1.1–1.1.10) in the ANSWER BOOK.

1.1.1 Only the stamen and the pistil are important for plant breeding.

1.1.2 Botanically tomato is classified as a fruit since it is developed from an ovary.

1.1.3 Sulphur is an example of a microelement

1.1.4 The active ingredient of a pesticide formulation is the component responsible for its toxicity or ability to control the target pest.

1.1.5 Systemic herbicide is best for perennial weeds.

1.1.6 Evaporation is loss of water through the leaves of a plant.

1.1.7 The quantity of irrigation water to be applied at each irrigation depends upon the amount of available moisture in the soil.

1.1.8 The quality of vegetables cannot be improved after harvesting, it can only be maintained.

1.1.9 Onion should be harvested when the tops begin to dry out and topple over.

1.1.10 Chilling leafy vegetables by using cold water at harvesting will help maintain quality and prevent wilting.

(10 × 1) (10)

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

COLUMN A		COLUMN B	
1.2.1	Plant of which seed develops inside ovaries	A	parthenocarpy
1.2.2	Preplanting treatment designed to increase the adaptability of plants to being transplanted to field conditions	B	glucose
1.2.3	High temperature induced seed dormancy	C	chlorophyll
1.2.4	Transfer of ripe pollen from anther to ripe stigma of flower	D	pollination
1.2.5	Number of crops to given area	E	sucker
1.2.6	Small plant growing from roots of bigger plant	F	companion plants
1.2.7	Green pigment in leaves	G	curing
1.2.8	Plants growing better when planted together	H	angiosperm
1.2.9	Molecule produced during light phase of photosynthesis	I	thermodormacy
1.2.10	Setting and development of fruit without sexual fertilisation resulting in seedless fruit	J	hardening
		K	cross pollination
		L	plant density
		M	seedling
		N	gymnosperm

(10 × 1) (10)

1.3. Define each of the following:

1.3.1 Tension meter

1.3.2 Macronutrients

1.3.3 Hydroponics

1.3.4 Blanking

1.3.5 Genetic modification

(5 × 2) (10)
[30]

QUESTION 2

2.1 The continuous demand for superior vegetable cultivars with attributes that increase both crop productivity and quality necessitates crop improvement through plant breeding. This is accomplished through hybridisation and selection.

2.1.1 Differentiate between *hybridisation* and *selection.* (2 × 2) (4)

2.1.2 State FOUR important aims of hybridising in vegetable production. (4)

2.1.3 Name TWO types of plant breeding. (2)

2.2 Effective management practices are required to achieve a high yield and quality vegetables in crop production.

2.2.1 State FIVE characteristics of a good seed. (5)

2.2.2 Name FOUR factors that should be considered when planning crop production. (4)

2.3 Because vegetables require constant soil moisture throughout the growing season understanding the evapotranspiration rate is important for irrigation scheduling purposes.

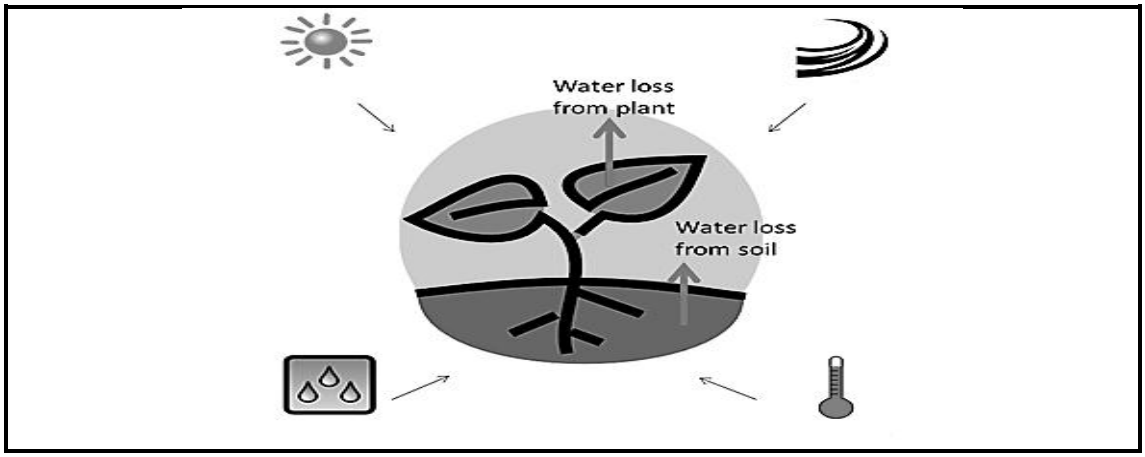


FIGURE 1

2.3.1 Identify the FOUR main drivers of evapotranspiration illustrated in FIGURE 1. (4)

2.3.2 Explain *irrigation scheduling.* (2)

2.3.3 Name TWO devices used for irrigation rescheduling. (2)

2.3.4 Describe how to use evapotranspiration rates for irrigation scheduling. (3)

[30]

QUESTION 3

3.1 Plants are one of the organisms capable of natural reproduction.

3.1.1 Name TWO types of plant reproduction. (2)

3.1.2 Name TWO parts that form the female part of a flower. (2)

3.1.3 Tabulate FOUR ways in which wind pollinated flowers differ from animal pollinated flowers. (4 × 2) (8)

3.2 Crop rotation is one of the organic farming practices recommended for sustainable agriculture.

3.2.1 Define *crop production.* (2)

3.2.2 Tabulate FOUR benefits and limitations of crop rotation. (8)

3.3 Pests and disease infestation in vegetable crops can cause heavy losses.

3.3.1 Do you agree with the above statement? (1)

3.3.2 Substantiate the answer in QUESTION 3.3.1. (4)

3.3.3 Explain *integrated pest management*. (3)

[30]

QUESTION 4

4.1 Study the diagram below and answer the questions.

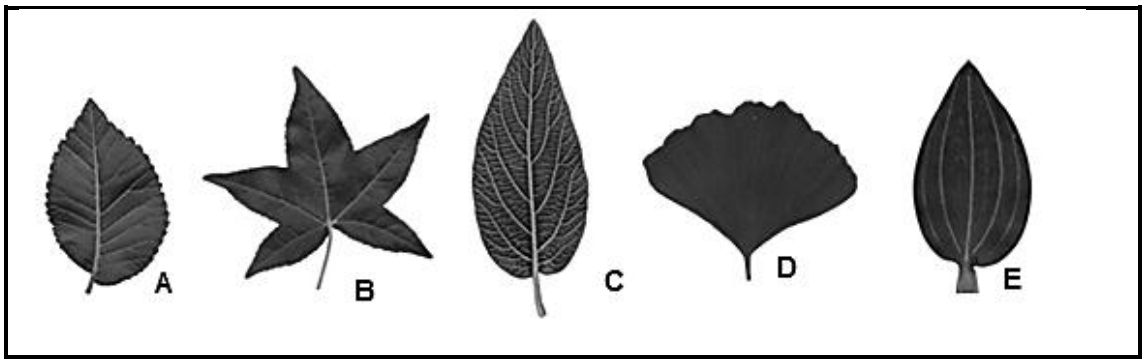


FIGURE 2

4.1.1 Indicate the venation type of the leaves illustrated in FIGURE 2 by writing the answer next to the letter (A–E) in the ANSWER BOOK. (5)

4.1.2 Explain the importance of the design of the leaf venation to plant performance. (2)

4.1.3 Briefly explain the functioning of the stomata of the leaf. (3)

4.2 Study the irrigation system below and answer the questions.



FIGURE 3

4.2.1 Identify the types of irrigation systems illustrated in FIGURE 3 by writing the answer next to the letter (A–B) in the ANSWER BOOK. (2)

4.2.2 State FIVE advantages of micro-irrigation. (5)

4.2.3 Which method identified in FIGURE 3 saves water? (1)

4.2.4 List FIVE factors to consider when choosing an irrigation system. (5)

4.2.5 Advise the farmer about the critical period of water use for each of the vegetable crops below.

(a) Peas
(b) Tomatoes
(c) Beetroot
(d) Cabbage
(e) Onion

(5 × 1) (5)

4.2.6 Explain the effect of irrigation B in FIGURE 3 on the leaves of plants. (2)

[30]

QUESTION 5

5.1 The high cost of skilled and hand labour has increasingly caused growers to turn to chemical weed control rather than to rely on cultivation and hand hoeing or pulling weeds.

5.1.1 Name THREE main types of herbicide used by farmers. (3)

5.1.2 Explain how each type of herbicide in QUESTION 5.1.1 works to destroy weeds. (6)

5.2 Trellising is one of the important practices in vegetable production.

5.2.1 Define *trellising.* (2)

5.2.2 Give TWO examples of vegetable crops requiring trellising. (2)

5.2.3 Explain the importance of trellising vegetable crops. (5)

5.3 Vegetables are moderate to highly perishable and are some of the most difficult commodities to market because of their perishability.

5.3.1 Name FOUR markets where a farmer can sell vegetable produce. (4)

5.3.2 State THREE main objectives of postharvest technology in crop production. (3)

5.4 Discuss the role of government in plant protection. (5)

[30]

TOTAL: 150

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