



**higher education
& training**

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

**FARM PLANNING AND MECHANISATION
NQF LEVEL 4**

(1011044)

**1 December 2020 (X-paper)
09:00–12:00**

This question paper consists of 9 pages.

150Q1N2001

<p>TIME: 3 HOURS MARKS: 150</p>


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 a black or blue pen.
 6. Write neatly and legibly.
-

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 In a force-feed lubrication system, the type of pump generally used in tractor engines is a ... pump.

- A centrifugal
- B gear 
- C rotary vane
- D plunger

1.1.2 Changing an organic substance into a non-organic substance:

- A Carbohydrates
- B Mineralisation
- C Enzymes
- D Lipids

1.1.3 ... is the degree to which the soil can hold water.

- A Water capacity
- B Drainage
- C Infiltration
- D Penetration 


1.1.4 The nonliving factors in the environment are the ...

- A abiotic factors.
- B biotic factors.
- C ecosystem.
- D biodiversity.


1.1.5 All types of animals found in the region they occupy are ...

- A the flora.
- B the fauna.
- C part of the pioneer community.
- D part of the climax community.

1.1.6 The sheltered side opposite to the windward side is the...

- A leeward side. 
- B windward side.
- C lean-to side.
- D valley side.


1.1.7 The growth conditions that are most suitable for a specific plant or animal are ...

- A the host.
- B the habitat.
- C the environment. 
- D arable.

1.1.8 A subsoiler plough is best suited for ...

- A breaking hardpan.
- B deep ploughing.
- C making ditches.
- D intercultivation.

1.1.9 The first set of species or community that develops in a bare area in ecological succession, is the ... community.

- A biotic
- B living
- C pioneer 
- D climax


1.1.10 The community of species that occupied and developed well on a land to limit any other species that may come to the land, is the ...

- A ceiling of succession.
- B climax community.
- C secondary succession.
- D pioneer community.

(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 The first community of plants and animals that develop on a newly developed piece of land, is referred to as the primary succession.


1.2.2 A silo is an airtight structure that encloses and protects grain or animal feed. 

1.2.3 Carnivores only depend on herbivores for living.

1.2.4 Primary agriculture refers to the addition of value to agricultural products.



1.2.5 One of the duties of farmers associations is to arrange for the farmer to get legal and political representation.

1.2.6 The transportation of facilities to and from an agricultural region is a socio-economic factor.

- 1.2.7 Coolant and engine oil levels should be checked every time before starting a tractor.
- 1.2.8 Power train refers to the complete path of power from the engine to the wheels. 
- 1.2.9 Subsistence farming is where only enough is being produced by the farmer for him/her and his/her family to survive.
- 1.2.10 A tariff is a type of tax that the government adds onto the price of, for example, imported goods.



(10 × 1) (10)

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

COLUMN A		COLUMN B	
1.3.1	Capital invested in farm structures such as fences, dams and canals	A	hydraulic
1.3.2	Amount of money the bank lends a farmer	B	model C
1.3.3	Its purpose is to drive implements pulled by a tractor	C	holding
1.3.4	An individual farmer buys land and establishes an agri-enterprise	D	fixed capital
1.3.5	System operated by sending pressure through a pipe of liquid such as water or oil	E	credit 
1.3.6	The water deep below the surface of the ground	F	power take-off (PTO)
1.3.7	A land covered by grass or other edible vegetation that is suitable for grazing	G	model B
1.3.8	Type of veld found in areas of high rainfall and where the soil is acidic or alkaline 	H	stub
1.3.9	A piece of a property to which the owner holds a legal title, or which is held by lease	I	debit
1.3.10	A part of a cheque or receipt that is torn off and kept as a record by the person issuing it	J	water table
		K	sour veld
		L	pasturage
		N	combustion
		M	counterfoil
		O	gearbox
		P	sweet veld

(10 × 1) (10)

1.4 Give ONE term for each of the following descriptions by writing the answer next to the question number (1.4.1–1.4.10) in the ANSWER BOOK.


- 1.4.1 A tax charged on all goods purchased in South African retail shops except for basic food. 
- 1.4.2 Natural veld found in the drier areas on neutral or alkaline soils.
- 1.4.3 Production land where crops produced only rely on natural rainfall.
- 1.4.4 A frame to which all parts of the plough are directly or indirectly attached.
- 1.4.5 A practice of removing wool from the body of an animal such as a sheep.
- 1.4.6 Species of plants that have adapted to survive in an environment with dry conditions and little water.
- 1.4.7 An area of land left uncultivated to regain fertility after the crop has been harvested.
- 1.4.8 Beating the plant to separate the grain from the stalk. 
- 1.4.9 A stock of animals with a distinctive appearance usually deliberately produced from the parents of the same kind.
- 1.4.10 Behavioural actions of some living organisms, protecting the area where they live against outsiders.

(10 × 1)




(10)
[40]

QUESTION 2


2.1 State the main purpose of each of the following:

- 2.1.1 Farmers' cooperative
- 2.1.2 Cattle crush
- 2.1.3 Fodder 
- 2.1.4 Pigsty
- 2.1.5 Spray race


(5 × 2) (10)

- 2.2 Give ONE example of each of the following categories of crops:
- 2.2.1 Legumes
- 2.2.2 Winter cereals
- 2.2.3 Tubers 
- 2.2.4 Fruit vegetables
- 2.2.5 Summer grain except maize (5 × 1) (5)
- 2.3 Some farmers are more willing to take risks than others, depending on the resources at their disposal. However, adjustments to their production plans must be made to take uncertain times into account.
- Diversification in production and rationing of inputs are the most applied strategies in uncertain times.
- 2.3.1 Explain the term *diversification* in a farm business.  (2)
- 2.3.2 Advise a farmer on how *rationing of inputs* could be applied as a strategy to adjust to uncertainty. (4)
- 2.4 Name ONE type of breed that produces each of the following products:
- 2.4.1 Meat (broilers)
- 2.4.2 Bacon
- 2.4.3 Eggs
- 2.4.4 Butter 
- 2.4.5 Pork (5 × 1) (5)
- 2.5 State the factors that a farmer should consider when choosing the type of livestock production. (2 × 2) (4)
- [30]**
- TOTAL SECTION A: 70**

SECTION B**QUESTION 3**

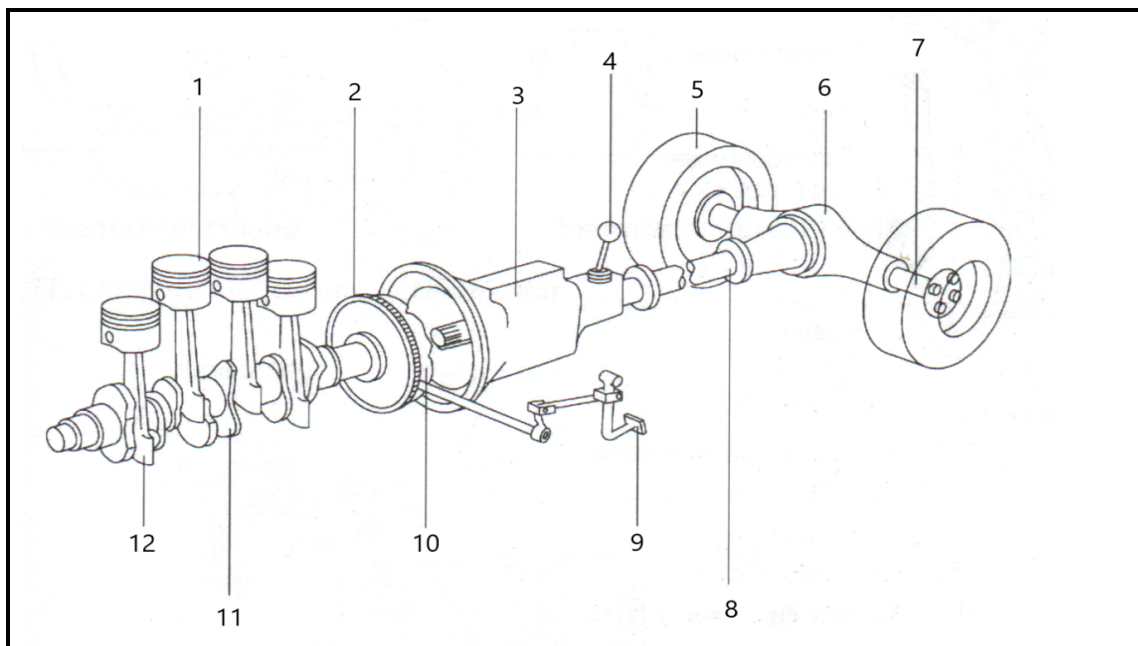
- 3.1 Name FOUR main determinants of the internal quality of fruits. (4)
- 3.2 Name TWO techniques of picking fruit.  (2)
- 3.3 Name FOUR grading categories of fruit. (4)
- 3.4 A farmer spends R5 000 per two hectares of land in producing maize of five tons per hectare. One ton of maize is sold at R2 000.
Calculate the return for the money invested in production. (4)
- 3.5 Explain how the SWOT analyses technique can be used in a farm business. (6)
- [20]**

QUESTION 4

- 4.1 State SIX factors that determine the supply of goods. (6)
- 4.2 Discuss FOUR external factors that affect the efficiency of manual power.  (4 × 2) (8)
- 4.3 State the FOUR factors that the farmer should regularly check to ensure the efficiency of an engine. (4)
- 4.4 State TWO disadvantages of manual power. (2)
- [20]**

QUESTION 5

5.1 Study the diagram below and answer the questions.



[Source: *Farm Planning and Mechanisation NQF Level 4*]



5.1.1 Name the parts indicated on the diagram by writing only the answer next to the number (1–12) in the ANSWER BOOK. (12)

5.1.2 Name TWO main components of a clutch. (2)

5.1.3 State TWO main functions of the part labelled 10 in the diagram above. (2)



5.2 Discuss the correct procedure for maintaining the *cooling system*. (8)

5.3 Explain the THREE possible causes of radiator leakage. (3)

5.4 Roads and paths are part of the most important infrastructures on a farm.

5.4.1 Explain the danger of a road that is not level. (2)

5.4.2 State THREE features of a good farm road. (3)

5.5 Farm equipment operators must be extremely careful when working around hydraulic equipment. Hydraulic pressure is strong enough to injure a person if a leak or explosion occurs.



State FOUR precautionary measures when working with hydraulic equipment. (8)

(4 × 2)

[40]

TOTAL SECTION B: 80
GRAND TOTAL: 150