NATIONAL SENIOR CERTIFICATE EXAMINATION
NOVEMBER 2020

AGRICULTURAL MANAGEMENT PRACTICES

Time: 3 hours 200 marks

PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY

1. This question paper consists of 12 pages. Please check that your question paper is complete.
2. This question paper consists of TWO sections.
3. Answer ALL the questions.
4. Read all the questions carefully and make sure that you answer only what is being asked.
5. Start EACH question on a NEW page.
6. Number your answers exactly as the questions are numbered.
7. Non-programmable calculators may be used.
8. ALL calculations must be rounded off to TWO decimal places unless stated otherwise.
9. It is in your best interests to write legibly and to present your work neatly.

SECTION A

QUESTION 1

1.1 Various options are provided as possible answers to the following questions. Choose the correct option and write the question number and the letter of your choice in the ANSWER BOOK, for example 1.1.11 B.

1.1.1 The fertiliser that must be applied to correct the low pH of soil with an excess of hydrogen ions is ...

A lime.
B urea.
C gypsum.
D ammonium sulphate.

1.1.2 As far as agriculture is concerned, South Africa is a "poor" country because …

(i) only 15% of the surface is suitable for economic plant production.
(ii) only a small part of the soil has a high production potential.
(iii) the largest part of the country has unreliable rainfall.
(iv) the majority of farmers are unskilled in agriculture.

Choose the correct combination.

A (i), (ii) and (iii)
B (ii), (iii) and (iv)
C (i), (ii) and (iv)
D (i), (iii) and (iv)

1.1.3 The most basic resource in the agricultural industry is …

A water.
B capital.
C soil.
D labour.

1.1.4 … refers to the grouping of soil particles in groups.

A Soil texture
B Soil structure
C Soil capacity
D Soil erosion

1.1.5 Examples of perennial grazing crops are …

A rye grass and wheat.
B barley and tef.
C oats and grazing vetch.
D lucerne and kikuyu.

1.1.6 Which ONE of the following statements on commercial farming is INCORRECT?

A The purpose is to sell almost all products and to make a profit.
B It can take place on a large scale (megafarmers) or on a small scale.
C The distribution of the product to traders is an important objective.
D The producer exchanges some of his products, but uses most himself.

1.1.7 The implement that is used to prepare a seed bed for planting vegetables is a …

A ripper.
B chisel plough.
C rotavator.
D disk plough.

1.1.8 The soil property that determines and affects most qualities of soil is the …

A soil structure.
B soil depth.
C soil texture.
D soil reaction.

1.1.9 The … proves that the value of the credit balances is equal to the value of the debit balances.

A cash book
B balance sheet
C income statement
D trial balance

1.1.10 The term … means a heat treatment of liquid products at 72 °C for about 15 seconds to eliminate pathogenic microorganisms.

A sterilisation
B pasteurisation
C heating
D preservation (20)

1.2 Choose a description from COLUMN B that matches the term in COLUMN A. Write down only the question number and the letter of your choice in the ANSWER BOOK, for example: 1.2.11 A.
Each description in COLUMN B may be used only ONCE.

COLUMN A		COLUMN B	
1.2.1	Desired fermentation	A	The management function that creates favourable conditions for workers to enable them to use their energy to the benefit of the farm operations.
1.2.2	Filtration		
1.2.3	Sterilisation	B	The value of land increases over time.
1.2.4	Motivation	C	The value of implements decreases over time.
1.2.5	Control	D	The process whereby wine and beer is produced and bread is proved.
1.2.6	Organising		
1.2.7	Appreciate	E	The management function that analyses and groups farming activities and determines the relationships between them.
1.2.8	Controlled marketing		
1.2.9	Cooperative marketing	F	Pooling systems.
1.2.10	Marketing chain	G	The process of removing turbid-making substances and microorganisms from suspensions.
		H	Government intervention takes place through price guarantees and subsidies.
		I	The process followed by the farmer to get the product from the farm to the consumer.
		J	The management function resulting in corrective action to rectify problems.
		K	Involves the process of heating a product to high temperatures to ensure that no living organism is present in the product.

(20)

1.3 Give the correct agricultural term for each of the following descriptions. Write down only the question number and the correct term in the ANSWER BOOK, for example 1.3.11 Sodium.

1.3.1 The type of tourist who follows routes to see how different nations/ races practise or offer agricultural activities.

1.3.2 The adjustment of a spray pump to function at the correct rate.

1.3.3 The process during which green plants use light energy, water and carbon dioxide to produce carbohydrates and release oxygen.

1.3.4 The management function that is required before any task on a farm can start or without which no activity is possible.

1.3.5 The process of progressively developing a pasture from pioneer veld into climax veld.

1.3.6 The primary source of fresh water in South Africa.

1.3.7 The production of various specialised products from the basic product.

1.3.8 The tillage practice to plant new crops between the crop residues of the previous season.

1.3.9 The statement written by farmers during a strategic planning process for their farming enterprise that indicates what the enterprise is about and also why it exists.

1.3.10 The source document issued to acknowledge that money has been received by the enterprise. (10)

50 marks

SECTION B

QUESTION 2 RESOURCE UTILISATION, LAND USE AND FARMING SYSTEMS

2.1 Carefully study the passage below and answer the questions that follow.

> Sound farming practices as well as sound management practices are the impetus for a number of soil functions, soil properties and soil qualities. Administering organic material results in an improved soil structure. The soil structure, in turn, improves the fertility, water retention ability and aeration of the soil. Cover crops and intercropping will improve the biodiversity, retain nutrients and buffer pest contamination in orchards, which decrease chemical inputs. Good crop rotation suppresses the spread and transmission of plant pathogens by insects and weeds.
>
> Various technologies can supplement the above farming practices to ensure maximum production through maximum resource utilisation and minimum inputs. Yield charts and nutrition status charts for the soil can be placed on top of each other to determine how nutritional deficiencies limit yield. Water stress in plants can be determined by using remote sensing technology. Electronic tags can indicate an increased temperature and heartbeat in animals.

2.1.1 Explain what is meant by an integrated pest and weed control programme by referring to THREE sections from the passage. (3)

2.1.2 Name TWO practices in addition to the sections listed in Question 2.1.1 to explain what is meant by an integrated pest and weed control programme. (2)

2.1.3 From the passage, list FOUR sound farming practices that farmers can use to improve soil health. (4)

2.1.4 In each of the cases below, explain how the relevant soil properties would affect the associated soil quality.

(a) The effect of a structureless soil on the water retention ability of soil. (2)

(b) The effect of a block-type structure on the tillability of the soil. (2)

2.1.5 Discuss the statement in the passage above: "Good crop rotation suppresses the spread of plant pathogens." (3)

2.1.6 Supply an agricultural term for the FIRST sentence of the SECOND paragraph in the passage above. (1)

2.1.7 Give TWO reasons why it is important for a farmer to know that certain animals on the farm have an increased body temperature. (2)

2.2 Study the case study below and answer the questions that follow.

A young man inherited a farm, farmhouse, implements, tools, farm bakkie and R1,5 million in cash from his father. The farm has approximately 400 ha tillable land to cultivate wheat, of which 100 ha is situated on a steep slope. The farm also has 100 ha marginal land, 600 ha natural grazing and 100 ha scrub.

As the farm is mainly dependent on rainfall, the young man sunk two boreholes and a contractor and his workers built a reservoir in which the water can be stored for possible irrigation. The young man also started with contour cultivation on the 100 ha soil on the steep slope to limit soil erosion.

After the available grazing has been studied, hired fencers fenced it off according to potential and palatability. The veld was divided into scrub, sweetveld, sourveld and mixed veld. The camps are supplied with water from the new reservoir. The average grass production of the grazing per ha per day was calculated at 6 kg with a crop factor of 0,4. In his research, the young man found that one head of cattle requires 10,55 kg grass per day.

The farm work is done by a farm manager and eight labourers who receive a basic minimum wage per week, stay on the farm, share in the profits and work forty-five hours per week.

2.2.1 Provide TWO examples of each of the following types of capital in the case study above.

(a) fixed (2)

(b) movable (2)

(c) operating (2)

2.2.2 Explain each of the following terms from the case study above.

(a) marginal land (2)

(b) crop factor (1)

2.2.3 Name TWO problems associated with the establishment of contour farming. (2)

2.2.4 Name TWO crop cultivation practices that the young man can combine with contour farming to limit run-off water and soil erosion. (2)

2.2.5 Calculate the number of cattle that the young man in the case study will be able to keep on the 700 ha grazing without harming the grass production. (5)

2.2.6 From the passage above, identify …

(a) the type of temporary labour. (1)

(b) TWO examples of temporary labourers. (2)

2.2.7 Name the labour law applicable to the minimum wage of the labourers. (1)

2.3 Study the table below and answer the questions that follow:

YEAR	FERTILISER kg/ha	TOTAL YIELD ton/ha	MARGINAL YIELD ton/ha
2013	0	2	2
2014	100	3	1
2015	200	4	1
2016	300	4,5	0,5
2017	400	4,8	
2018	500	4,5	

2.3.1 Identify the economic property of soil depicted by the table above. (1)

2.3.2 Fully explain the economic property identified in Question 2.3.1 by using the marginal values in your discussion. (5)

2.3.3 Calculate the marginal value for the year 2018. (Show calculations.) (3)

[50]

QUESTION 3 AGRITOURISM AND MARKETING

3.1 Study the passage below and answer the questions that follow.

A farmer operating a feeding pen and an abattoir intends to add a butchery to his enterprise. However, the farmer requires financing, as this expansion of his existing enterprise means that he will be responsible for processing, packaging, cooling, marketing and transporting his products. To finance the new section of his enterprise, the farmer compiles a business plan to obtain a loan from the bank. Competition in the area close by necessitates the intended expansion of his existing enterprise and it will also ensure the sustainability of the enterprise for next generations.

Thorough research by the farmer shows that the intended expansion will be economically viable, as the population in the area shows excellent growth. Production security is provided and ensured by the existing enterprise. No risks are foreseen for the environment or social community.

3.1.1 Define the term "business plan". (3)

3.1.2 Name ONE reason from the passage and THREE additional reasons why the farmer has compiled a business plan. (Underline the reason from the passage.) (4)

3.1.3 From the passage, list FOUR pillars that can be used to judge a sustainable farming system. (4)

3.1.4 Using relevant examples from the passage, explain what is meant by a SWOT analysis, as this always forms part of a business plan. (8)

3.2 Provide THREE reasons why a rising farmer or a subsistence farmer would rather use draught animal power than tractor-driven mechanisation. (3)

3.3 Define the term *Agritourist*. (3)

3.4 The table below shows the number of watermelons offered and sold per week at different prices by a fresh-produce market at a vacation town. Study the table and answer the questions that follow.

DATE	PRICE (R)	SUPPLY	DEMAND
15/12/18	R60,00	500	100
22/12/18	R55,00	450	300
27/12/18	R50,00	450	350
04/01/19	R40,00	400	400
11/01/19	R30,00	250	450

3.4.1 Draw a line graph to represent the number of watermelons sold from 15/12/2018 to 11/01/2019. (6)

3.4.2 Explain how the price of a watermelon in the above table would affect its supply and demand. (3)

3.4.3 From the table above it is clear that the price of watermelons affects their supply. Provide THREE other factors that would also affect the supply of watermelons. (3)

3.4.4 Explain what the concept of *market equilibrium* implies. (2)

3.4.5 During which date was market equilibrium reached? (1)

3.4.6 Calculate the break-even point per watermelon sold in the market during the week of 11/01/19. The fixed cost is R16,00 and variable cost is R10,00 per watermelon. Use and show the correct formula in the calculation. (4)

3.4.7 Indicate which marketing method is used in the table above. (1)

3.4.8 Indicate which type of marketing channel is used in the table above. (1)

3.4.9 From the information in the table above there is ONE very obvious disadvantage of the type of marketing channel. State this disadvantage. (1)

3.4.10 Provide THREE reasons (advantages) why producers would use this type of marketing channel. (3)

[50]

QUESTION 4 FARM MANAGEMENT, FINANCIAL PLANNING AND ADDING VALUE TO HARVESTS

4.1 Carefully study the information below and answer the questions that follow:

HEADING: Farm bookkeeping involves the preparation of trial balances, journal entries, balance sheets, source documents (business transactions) and ledger entries.

LIST OF ITEMS

ITEM	VALUE (R)
Cooperative account (seed)	280 000,00
Balance in the bank	112 045,00
Owing to fertiliser company	86 054,00
Owing on repair of machinery	15 365,00
Farm and buildings	4 600 000,00
Livestock on farm	458 000,00
Veterinary account	32 026,00
Mortgage loan	1 250 000,00
Vehicles	980 000,00
Implements	765 567,00

INCOMPLETE FINANCIAL STATEMENT

A1	ASSET ITEMS	VALUE
A2	TOTAL	
B1	LIABILITY ITEMS	VALUE
B2	TOTAL	
C	NET CAPITAL (owner's equity)	

4.1.1 In the HEADING above five forms of bookkeeping (known as the steps in bookkeeping) are indicated. Arrange these steps from step 1 to step 5. (5)

4.1.2 Redraw the **incomplete financial statement** in Question 4.1 in your Answer Book and complete the statement by filling in the list of items mentioned above. (5)

4.1.3 Calculate the net capital in the financial statement in Question 4.1.2. (3)

4.1.4 Identify the financial statement drawn/compiled in Question 4.1.2. (1)

4.1.5 Analyse the answer in Question 4.1.3 by referring to the liquidity and viability of the enterprise. (3)

4.2 Study the passage below and answer the questions that follow.

Various factors, such as the perishableness of the product, distance from the market, infrastructure, processing facilities and transport, determine whether an agricultural product such as grain will be processed or sold fresh. The same factors also determine the way grain is processed and stored. Subsistence farmers can do after-harvest processing and storage on the farm, but for the commercial grain farmer sorting and grading are of the utmost importance and they largely make use of commercial millers and cooperative granaries to do these things for them.

Insects are adapted to survive in most habitats and stored grain is no exception. Approximately 25% of grain harvests worldwide are lost during storage. Insects in stored grain feed on the endosperm and cause loss of grain mass, a decrease in nutritional value and poorer quality. Seed distributors of grain also experience lower seed germination if contaminated seed is sold and planted.

A single insect causes little damage, but because they show fast population growth in favourable conditions, losses are very big. A high grain moisture content, temperatures at 30 °C and a relative humidity of 40% and higher are ideal conditions for the population growth of insects.

Infestation of stored grain mainly takes place through contact with other grain that is already contaminated or populations that survive in storage facilities. Unhygienic storage conditions and poor maintenance of storage facilities therefore cause fast spreading of the insects. The most common insects in stored grain is flour beetles, rusty red grain beetles, granary weevils and grain moths.

4.2.1 Explain the following terms from the passage:

(a) commercial farmer (2)

(b) processed (2)

4.2.2 Provide ONE reason why the grading of grain is very important for the commercial grain farmer. (1)

4.2.3 Referring to the passage, explain THREE precautionary measures that can be taken to slow down or stop the population growth of possible insect contamination. (3)

4.2.4 Name TWO ways to prevent insect contamination in granaries. (2)

4.2.5 Provide THREE reasons why the processing of grain is important for the consumer. (3)

4.2.6 From the passage, identify a term/word that refers to the:

(a) primary agricultural sector (1)

(b) secondary agricultural sector (1)

(c) tertiary agricultural sector (1)

4.3 The packaging of food is a specialist field and it should be seen as a unit within the total food-processing effort.

4.3.1 Provide FOUR reasons why food is mainly packaged. (4)

4.3.2 Provide THREE reasons why scientists prefer packaging material made of milk protein rather than cling film. (3)

4.4 Management is a comprehensive combination of processes. The farmer can implement these processes through decision-making.

Arrange the following steps of planning in the correct order by writing down only the letters A–F in the correct order.

A Compile a plan of action.

B Control and evaluate the plan to eliminate possible shortcomings.

C Collect ideas and information and arrange this information.

D Formulate aims and objectives.

E Consider all variables that cannot be controlled.

F Consider possible methods of action. (6)

4.5 Budgets have a planning function as well as a control function.

4.5.1 Define the term "budget". (3)

4.5.2 State the purpose of a maintenance budget. (1)

[50]

150 marks

Total: 200 marks