basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

AGRICULTURAL MANAGEMENT PRACTICES

NOVEMBER 2010

MARKS: 200

TIME: 2½ hours

This question paper consists of 16 pages and an answer sheet.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of FOUR questions. Answer ALL the questions.
2. SECTION A (QUESTION 1) must be answered on the attached ANSWER SHEET.
3. Place the ANSWER SHEET for SECTION A (QUESTION 1) inside the front cover of the ANSWER BOOK.
4. SECTION B (QUESTIONS 2 to 4) must be answered in the ANSWER BOOK.
5. Start EACH question in SECTION B on a NEW page.
6. Read the questions carefully and align your responses accordingly.
7. Number the answers correctly according to the numbering system used in this question paper.
8. Non-programmable calculators may be used.
9. ALL calculations must be rounded off to TWO decimals unless stated otherwise.
10. Write neatly and legibly.

SECTION A

QUESTION 1

1.1 Various options are provided as possible answers to the following questions. Choose the answer and make a cross (X) in the block (A – D) next to the question number (1.1.1 – 1.1.10) on the attached ANSWER SHEET.

Example:

1.1.11	~~A~~	B	C	D

1.1.1 The best arable soils have the following characteristics:

i Are fertile
ii Are deep
iii Are sloping
iv Are rocky

A i and iv
B iii and iv
C i and ii
D ii and iii

1.1.2 The climatic factor that has the biggest influence on biological processes in agricultural production, such as the flowering stages of crops or the reproductive cycles of animals, is …

A rainfall.
B the length of the daylight period.
C humidity.
D wind.

1.1.3 The suitability of land for agricultural and non-agricultural purposes is determined by …

A a soil survey.
B a soil sample.
C soil profiles.
D an aerial photograph.

1.1.4 The slope that is the most suitable for frost-sensitive crops in South Africa is the … -facing slope.

A south
B north
C west
D east

1.1.5 The most efficient way of managing information of all the activities on your farm, is by using …

A a mechanical filing system.
B a diary.
C loose papers.
D a computer.

1.1.6 A management principle used to ensure that there are no overlapping of tasks on a farm, is …

A planning.
B organising.
C coordination.
D evaluation.

1.1.7 The price of agricultural produce on an open-market (free-market) system is determined by …

A demand only.
B supply only.
C quality only.
D supply and demand for a specific quality.

1.1.8 A farmer has converted a part of his farm into a nature reserve with accommodation facilities that will provide jobs for people from the local community. The focus of this agritourism venture will include the following components:

i Tourism
ii Conservation
iii Local community

A i
B i and ii
C ii and iii
D i, ii and iii

1.1.9 A farmer has invested in a processing unit on his farm. The main aim of this processing unit is to …

A produce more expensive products.
B adhere to consumer preferences.
C increase labour involvement.
D increase income for this farmer.

1.1.10 The world-wide trend is to produce agricultural products which have a higher market value and that are more environmentally friendly. This objective could be achieved by using …

A precision farming.
B organic farming.
C intensive farming.
D hydroponics. (10 x 2) (20)

1.2 Choose a description from COLUMN B that matches an item in COLUMN A. Write only the letter (A – O) next to the question number (1.2.1 – 1.2.10) on the attached ANSWER SHEET, for example 1.2.11 P. Each description in COLUMN B may only be used ONCE.

COLUMN A		COLUMN B	
1.2.1	Health Act	A	regulates the requirements for buildings and sanitation facilities on a farm
1.2.2	Precision farming	B	capital used to buy fuel for the tractor
1.2.3	Organisation	C	the management principle needed when you start a new enterprise
1.2.4	Processed meat	D	planning a fertilisation strategy based on results from soil samples
1.2.5	Grading system	E	the management principle utilised in the acquiring and use of resources to obtain the aims of the enterprise
1.2.6	Cash flow	F	measurement, calculation and setting of implements that are used to apply substances in the production process
1.2.7	Calibration	G	different beef cuts
1.2.8	Movable capital	H	understanding the effect of the global recession on the price of agricultural produce in South Africa and improvising your marketing strategies to maintain maximum profit
1.2.9	Planning	I	milling of plant products to increase their market value
1.2.10	Strategic marketing	J	classifying a product according to preset criteria after harvesting
		K	keeping track of the daily movement of your money
		L	having animals in a feedlot and feeding them ad lib
		M	capital used to buy more stock for an animal production enterprise
		N	the use of a centre-pivot irrigation system
		O	the salting and drying of fresh meat

(10 x 2) (20)

1.3 Give ONE word/term for each of the following descriptions. Write only the word/term next to the question number (1.3.1 – 1.3.10) on the attached ANSWER SHEET.

1.3.1 Knowledge of agricultural practices that people of a specific region have gathered over many years to use in their agricultural enterprises

1.3.2 The capability of soil to retain moisture for plants to grow

1.3.3 The marketing of local produce on markets to countries like Botswana and England

1.3.4 The management principle that needs to be applied to ensure that labourers voluntarily continue to work at higher productivity levels

1.3.5 The process used to separate a liquid product from solid impurities by using a cotton cloth in the processing of an agricultural product

1.3.6 The part of the business plan that handles the selling and distribution of the produce

1.3.7 Grass banks strategically placed on sloped arable fields to prevent soil erosion

1.3.8 The type of action that needs to be taken after you have determined the problems and the reason for the problems

1.3.9 The part of the strategic management plan that refers to the characteristics of the farm in the future and answering questions on the enterprise

1.3.10 Cash used for postage, fixing a flat tyre and other small payments

(10 x 1) (10)

TOTAL SECTION A: 50

SECTION B

QUESTION 2: ANIMAL AND CROP PRODUCTION

2.1 Whether you own or rent land, the productivity of agricultural land must be evaluated using criteria such as the pasture's carrying capacity and the estimated yield of crop production. This means that the agricultural resources should be used in line with criteria to protect and preserve these resources.

2.1.1 Name any THREE natural agricultural resources that determine the productivity of a farming unit. (3)

2.1.2 Formulate TWO guidelines that a farmer needs to follow on pastures that will conserve and even improve the productivity of these pastures. (2)

2.2 Both commercial and subsistence farmers make use of the three different intensities of agricultural production systems which depend on the size of the land, capital inputs, labour inputs and use of technology.

Name and describe each of the THREE intensities of agricultural farming systems. (6)

2.3 Rosina is a farm worker on the Jouberts' farm. She is not a full-time labourer, but she has been hired to assist in peak periods which occur on the farm at the same time each year. Her husband Robert is only hired to fix the damaged assets on the farm as they occur.

Describe the type of temporary labourer represented by Rosina and Robert respectively. (2)

2.4 A farmer considers starting a new production enterprise to increase the profit margin of the farm. To start a new enterprise, particular factors need to be taken into consideration.

Name FOUR factors that need to be considered when determining the production enterprise that will increase the profit. (4)

2.5 Soil is the farmer's basic resource. Without it there can be no agriculture, no plants, no animals and no people. Because of that, it needs to be conserved and used optimally. Adding organic material to the soil to form humus, is one of the ways to conserve and improve soils.

Name FIVE effects that an organic fertilising strategy will have on the soil that will contribute to the physical improvement of the soil. (5)

2.6 The scenario below refers to the production aspects of a large-scale crop enterprise.

Imagine you are a farmer driving along your 800 hectare crop fields late in the season. You remember the time during the growing season when you pushed a button on your tractor to turn on its global positioning system (GPS) which pinpointed your exact location of planting within one metre. Touching another button, a series of the geographical information system (GIS) was displayed, showing where the soil in your field was moist and where there were factors within the soil that limited crop growth. You uploaded the remote sensing data, to show where the budding of new crops were already thriving and areas where they were not. You could hit SEND to upload this data into an onboard machine to automatically regulate the application of fertilisers and pesticides – just the right amounts and exactly where the chemicals were needed.

[Adapted from: Earth observatory.
www.earthobservatory. Nasa.gov/study/PrecisionFarming]

2.6.1 Identify the intensive farming system which is described in the scenario above. (1)

2.6.2 List FOUR technological tools used in the planting of crops according to the information from the paragraph above. (4)

2.6.3 State FOUR advantages of using the technological tools mentioned in QUESTION 2.6.2. (4)

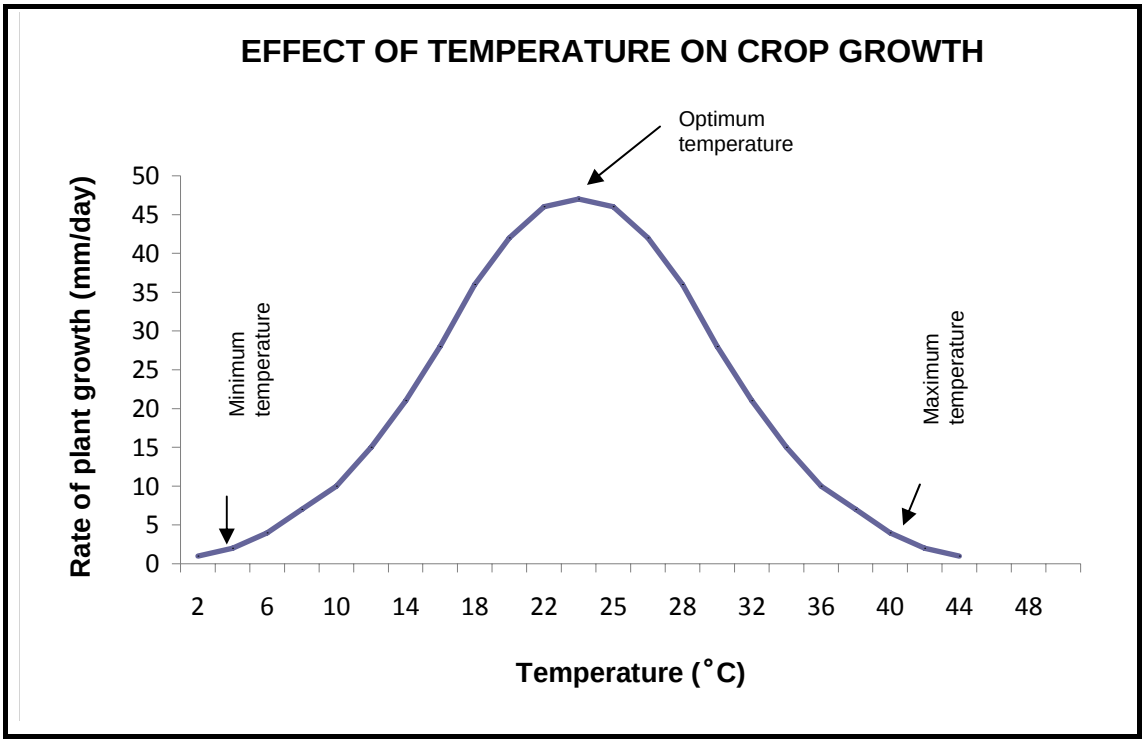
2.7 A prominent subsistence farmer depends on natural rainfall for livestock and crop production. Natural grazing forms an important source of the farmer's animal nutrition. The farmer manages the pasture in such a way that it will give the highest possible yield on this mixed farming enterprise. The grazing norms are set for each pasture type and should be adhered to. One way of achieving this is by dividing the farm into camps. A further challenge for this farmer is that 25% of the crop land is waterlogged.

2.7.1 Name FOUR characteristics used to classify natural pastures. (4)

2.7.2 State THREE ways to solve the problem of waterlogging in the crop fields. (3)

2.7.3 Describe THREE reasons for the division of grazing pastures into camps. (3)

2.8 The graph below illustrates the effect of temperature on crop growth in a greenhouse.



2.8.1 List the effects that the different temperatures shown in the graph above will have on crop growth by referring the minimum, optimum and maximum temperatures. (3)

2.8.2 Determine the following from the graph above:

(a) Plant growth rate at a temperature of 14 ℃ (1)

(b) The temperatures where the plant will grow at a rate of 40 mm/day (2)

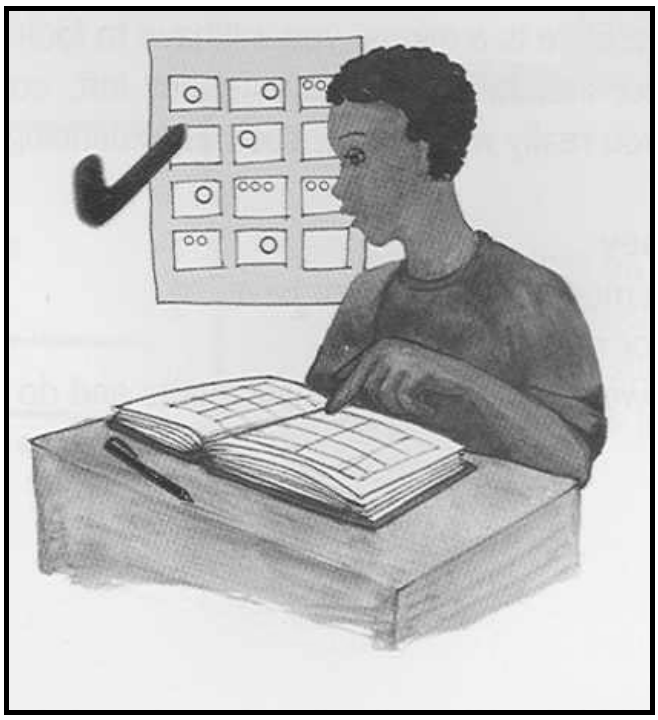
2.8.3 The maximum temperature indicated on the graph seems to be too high for the plant growth. State THREE ways to control such high temperatures. (3)

[50]

QUESTION 3: RECORDING, FINANCIAL STATEMENTS AND ENTREPRENEURSHIP

Start this question on a NEW page.

3.1 On a well-managed farm it is common practice to issue receipts and keep record of sales.



3.1.1 Give FOUR reasons why it is important for a farmer to issue receipts and keep record of sales. (4)

3.1.2 List FIVE elements or data that should be reflected on cash receipts invoices. (5)

3.2 An emerging farmer wants to start an agricultural enterprise. The farmer applied for a loan at the Land Bank and the bank requested a business plan from this farmer.

3.2.1 Name the SIX main aspects reflected in a business plan. (6)

3.2.2 Explain the value and necessity for the farmer to have a business plan. (1)

3.3 The table below represents an example of a feed control sheet in an animal production enterprise.

Feed control sheet for November 2009

DATE	TRANSACTION	EXPECTED QUANTITY RELEASED (kg)	CUMULATIVE QUANTITY OF FEED (kg)	DESCRIPTION OF USAGE
1 Nov.	Opening stock		350	
4 Nov.	900 kg delivered		950	
11 Nov.	Expected amount collected	250	700	To feed animals in block A
13 Nov.	Expected amount collected	300	400	To feed animals in block B
30 Nov.	Stocktaking		340	

3.3.1 Calculate the quantity of feed that has been lost during this month. (2)

3.3.2 Name THREE possible causes for the loss of feed calculated in QUESTION 3.3.1. (3)

3.3.3 Suggest FOUR measures that can be implemented by the farm manager to minimise the loss of feed. (4)

3.4 A prominent field crop farmer provides the information below.

Value of farmland he owns R1 000 000,00
Value of farmhouse he owns R500 000,00
Cash in hand R50 000,00
Stock of seeds R80 000,00
Outstanding bank loan R250 000,00
Loaned seeds from neighbour R50 000,00
Inputs loaned from local cooperative R20 000,00
Balance in the bank R20 000,00

3.4.1 Write down ONE example for each of the following categories from the information given above:

(a) Fixed assets
(b) Current assets
(c) Long-term liabilities
(d) Current liabilities (4)

3.4.2 Calculate the total value of assets that this farmer owns. (2)

3.4.3 The first priority of this farmer is to pay all outstanding loans. Explain the possible reason for this decision by the farmer. (2)

3.5 Depreciation of an asset can be defined as a loss in value over time. A farmer bought a tractor at R1 000 000,00 and the depreciation value of the tractor is 20% per annum.

3.5.1 Use the formulae below to calculate the depreciation in the value of this tractor over a period of FIVE years.

$$\text{Resale value} = \text{initial value}\,(1 - \%\ \text{depreciation})^{\text{years}}$$

$$\text{Depreciation} = \frac{\text{initial value} - \text{resale value}}{\text{years}}$$

(5)

3.5.2 Give TWO possible reasons for the depreciation in the value of assets, like the tractor mentioned above. (2)

3.6 A farmer decides to change his crop production enterprise from a rain-fed (dry-land) enterprise to an irrigated farming enterprise. The rain-fed enterprise generated an annual income of R98 000 from the sale of the annual produce. The annual production cost was R61 500. Under irrigation this farmer will grow crops all year round with a projected annual income of R177 500 and an estimated annual production cost of R109 000.

Use this information to complete the table of the projected partial budget below. Write the answer next to the question number (3.6.1 – 3.6.3) in the ANSWER BOOK.

PARTIAL BUDGET			
PROPOSED CHANGE: IRRIGATED FARMING			
POSITIVE EFFECTS	**VALUE**	**NEGATIVE EFFECTS**	**VALUE**
Additional annual income	3.6.1	Reduced income	
		Additional annual production cost	3.6.2
Change on net income: (Additional annual income less additional annual production cost)	3.6.3		

(6)

3.6.4 Make a recommendation, based on the data above, to encourage other farmers in that area to change to irrigation farming. (1)

3.6.5 Deduce THREE possible reasons for the rise in annual production cost from a rain-fed enterprise to an irrigation enterprise. (3)

[50]

QUESTION 4: HARVESTING, VALUE-ADDING, MARKETING, AGRITOURISM AND INDUSTRY

Start this question on a NEW page.

4.1 A farmer wants to evaluate and compare machine harvesting with harvesting using hand tools. This farmer draws up a table similar to the one below.

Redraw the table below in your ANSWER BOOK and use it to list THREE characteristics of each method of harvesting.

HARVESTING METHOD	CHARACTERISTICS
Machine harvesting	
Using hand tools	

(6)

4.2 The paragraph below refers to pasteurisation and preservation of a food product.

> Pasteurised eggs appeared on the South African market two years ago under the brand 'Safe Eggs'. 'Safe Eggs' has the patented international rights for the pasteurisation of eggs in the shell that consists of microwave and dry heating technology. This breakthrough made South Africa a world leader in the development of food security.
>
> [Extract from: *Afgriland,* May/June 2009]

4.2.1 Give FOUR reasons why it is important to preserve a food product. (4)

4.2.2 Briefly describe the *pasteurisation process of food*. (4)

4.3 Many processes and practices take place in a food processing plant to ensure that only meat of good quality is sold to consumers.

Explain this statement by referring to each of the following aspects:

4.3.1 Handling of animals in the abattoir (2)

4.3.2 Slaughtering/Killing the animal (2)

4.3.3 Cleanliness and hygiene (2)

4.3.4 Handling of the carcass (2)

4.4 Fresh agricultural products must be stored properly to preserve their quality and keep their market value. The storage facility must have high hygiene standards.

Briefly describe each of the following guidelines for such a storage facility for farm produce:

4.4.1 Material used for construction (2)

4.4.2 Flooring and roofing (2)

4.5 The farmer can sell produce in the free market system.

4.5.1 Briefly describe TWO main aspects that characterise the free market system. (2)

4.5.2 State TWO advantages of the free market system to a farmer. (2)

4.5.3 State TWO disadvantages of the free market system to a farmer. (2)

4.6 An agricultural product follows a series of steps during its marketing before it reaches the consumer.

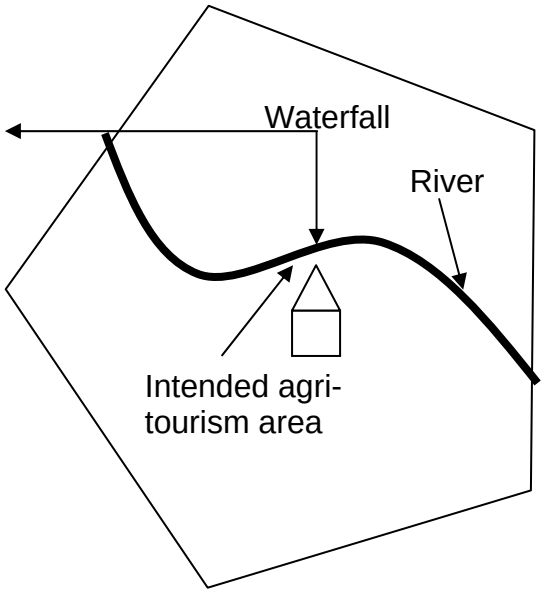
4.6.1 Identify the concept with regard to marketing that is described above. Give a reason to support your answer. (2)

4.6.2 Arrange the following sites in the marketing process to follow a logical pattern:

processing plant → vendor's stall → farm → wholesaler (4)

4.7 The Nyakanyaka family wants to add value to their farm by allowing tourists to visit their property. A small river with a beautiful waterfall runs through this farm.

Map of the Nyakanyaka family farm



The following facilities are located about 500 m away from the river banks and near the waterfall:

- Caravan parking space
- An emergency sick room with first-aid kits
- A tuck shop
- A dumping site used by the farmer and the workers' families

4.7.1 Identify TWO facilities from the information above that are necessary to attract tourists. (2)

4.7.2 Indicate a facility from those listed above that should be moved away from this area for agritourism development. Give TWO reasons to support your answer. (3)

4.7.3 Identify the facility from the list above that is related to social welfare and health in the intended agritourism business. (1)

4.8 The table below represents the price of an agricultural product on a South African food market.

PRICE OF AN AGRICULTURAL PRODUCT	
MONTH	**PRICE (R/bag)**
August	50
September	35
October	25
November	15
December	25
January	5
February	10

4.8.1 Draw a line graph to reflect the prices of the agricultural product in the table above. (4)

4.8.2 Give TWO possible reasons for the initial decrease in price from August to November and then the sudden increase in December. (2)
[50]

TOTAL SECTION B: 150
GRAND TOTAL: 200

CENTRE NUMBER: | | | | | | | | |

EXAMINATION NUMBER: | | | | | | | | | | | | | |

SECTION A

QUESTION 1.1

1.1.1	A	B	C	D
1.1.2	A	B	C	D
1.1.3	A	B	C	D
1.1.4	A	B	C	D
1.1.5	A	B	C	D
1.1.6	A	B	C	D
1.1.7	A	B	C	D
1.1.8	A	B	C	D
1.1.9	A	B	C	D
1.1.10	A	B	C	D

(10 x 2) (20)

QUESTION 1.2

1.2.1	
1.2.2	
1.2.3	
1.2.4	
1.2.5	
1.2.6	
1.2.7	
1.2.8	
1.2.9	
1.2.10	

(10 x 2) (20)

QUESTION 1.3

1.3.1 ……

1.3.2 ……

1.3.3 ……

1.3.4 ……

1.3.5 ……

1.3.6……

1.3.7……..

1.3.8……..

1.3.9……..

1.3.10……

(10 x 1) (10)

TOTAL SECTION A: 50