



AGRICULTURAL MANAGEMENT PRACTICES

Time: 3 hours

200 marks

PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY

1. This question paper consists of 14 pages and an Answer Sheet of 4 pages (i–iv). Detach the Answer Sheet from the centre of the question paper and ensure that it is handed in together with the Answer Book.
 2. This question paper consists of TWO sections – Sections A and B.
 3. Section A must be answered on the attached Answer Sheet.

Section B must be answered in the Answer Book, except for Question 3.3.1 and Question 3.4.2 which must be answered on the Answer Sheet.
 4. Answer ALL the questions.
 5. Read ALL the questions carefully and make sure that you answer only what is asked.
 6. Start EACH question on a NEW page.
 7. Number the answers as the questions are numbered on the question paper.
 8. Non-programmable calculators may be used.
 9. ALL calculations must be rounded off to TWO decimal places unless stated otherwise.
 10. It is in your own interest to write legibly and to present your work neatly.
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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.

1.1.1 One of the following is a main factor used to determine the veld type.

- A Amount of grass
- B Density of the grass
- C Amount of Karoo bush
- D Composition of grass species

1.1.2 The term used to describe the amount of moisture that soil can retain after rainfall or irrigation.

- A Soil aeration
- B Water-holding capacity
- C Soil water
- D Soil drainage

1.1.3 The following practice will increase the carrying capacity of natural pastures.

- A An increase in stocking rate
- B Rotational grazing
- C Uncontrolled veld burning
- D A system of kraaling the animals

1.1.4 This is a type of worker that is trained to perform specialised tasks for a long time.

- A Unskilled worker
- B Skilled worker
- C Casual worker
- D Temporary worker

1.1.5 One of the following is an example of production capital or working capital.

- A Milking machines
- B Fertilisers
- C Breeding cows
- D Shearing machines

1.1.6 The term used for the relation between profit and loss of a farming enterprise.

- A Gross profit
- B Gross income
- C Gross expenditure
- D Gross margin

1.1.7 The type of credit normally used for purchasing land, or for expensive fixed improvements such as buildings or boreholes.

- A Intermediate credit
- B Short-term credit
- C Long-term credit
- D Medium-term credit

1.1.8 One of the following is NOT a function of agricultural marketing.

- A Processing
- B Planting
- C Storage
- D Transport

1.1.9 The management process that is involved when making a choice between two alternatives.

- A Decision-making
- B Motivation
- C Control
- D Leadership

1.1.10 One of the following is NOT a role of an agricultural producer organisation.

- A Conducts research
- B Sets market prices
- C Negotiates on behalf of the producers
- D Provides training

(20)

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

Column A		Column B	
1.2.1	Calibration	A	Using advanced and modern technology to optimise the production output of the farm.
1.2.2	Commercial farming	B	The maximum amount of water that can be retained by the soil.
1.2.3	Carrying capacity	C	Farming enterprise that produces a high volume of products on a relatively small piece of land.
1.2.4	Intensive farming	D	Sells agricultural products on the export market on behalf of the farmer.
1.2.5	Irrigation scheduling	E	The production of agricultural products for income generation.
1.2.6	Market agent	F	The total number of animals on a farm in a year.
1.2.7	Organic farming	G	Applying water to plants only when necessary and using the correct amount.
1.2.8	Equilibrium	H	A farm on which beef cattle and maize are produced.
1.2.9	Mixed farming	I	Setting of sprayers to deliver the correct amount of herbicide.
1.2.10	Precision farming	J	The number of animals kept per hectare without degrading the natural grazing.
		K	The point in the market where the supply of a product is the same as the demand for that product.
		L	Farming that uses compost and indigenous knowledge to control pests.

(20)

- 1.3 Give the CORRECT agricultural term for each of the following descriptions. Write only the term next to the question number (1.3.1–1.3.10) on the attached ANSWER SHEET, for example 1.3.11 Manufacturing.
- 1.3.1 A veld type that contains a balance between sweet veld and sour veld grasses.
- 1.3.2 A farming method where the same crop is produced on the same piece of land year after year.
- 1.3.3 A farming system that produces small volumes of products on land of a limited size.
- 1.3.4 The growing of crops without the use of irrigation.
- 1.3.5 The type of labourer who works on a farm during the same period each year to perform tasks that occur yearly.
- 1.3.6 The financial statement that reflects the probable income and expenditure for the year to come.
- 1.3.7 The document issued as proof of a transaction between a seller and a buyer.
- 1.3.8 The marketing system in which the government fixes prices and controls the marketing process.
- 1.3.9 Examination of carcasses at an abattoir to ensure they are free from any pests or diseases.
- 1.3.10 Applying very high temperatures to agricultural products in order to completely destroy all living organisms that may cause spoilage. (10)

50 marks

SECTION B

QUESTION 2 FARM PLANNING (PHYSICAL AND FINANCIAL)

2.1 Read the article below, which was taken from a *Farmer's Weekly* magazine (22 November 2016), and answer the questions that follow.

Investing in farming technology: how much is too much?

Advanced new farming technology is changing the way farmers produce food and manage their businesses. But how do producers know if they're spending too much on technology and if the new equipment will ultimately yield the promised financial returns?



[Photo: *Farmer's Weekly* Archive]

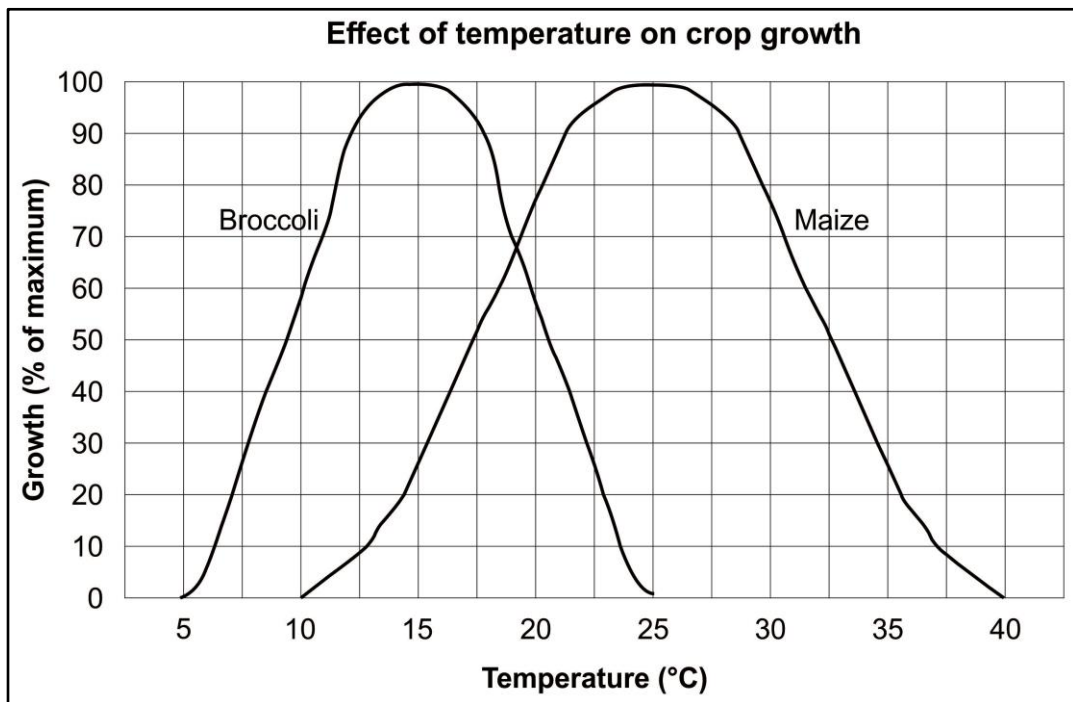
- 2.1.1 Name TWO advantages and TWO disadvantages of using high levels of technology in today's farming operations. (4)
- 2.1.2 Give FOUR factors that a farmer should consider when deciding on the level and type of technology that would best suit a particular farming operation. (4)
- 2.1.3 Using advanced farming technology requires machinery operators that are suitably trained. List THREE important aspects that should be included in staff training. (3)
- 2.2 2.2.1 State the FOUR main types of resource information included on a farm map. (4)
- 2.2.2 List FOUR factors used to determine whether a soil is arable, and explain the significance of each factor. (8)

2.3 A farmer with 500 ha of sour veld grazing and 100 ha of arable land on the farm is trying to determine the most suitable enterprises for a mixed farming system.

2.3.1 Outline FOUR advantages of a mixed farming system, as opposed to farming with a single enterprise. (4)

2.3.2 Suggest TWO enterprises that would make a suitable combination in a mixed farming system. Support your choices. (4)

2.4 The graph below shows the influence of temperature on crop growth. Answer the questions that follow.



[Adapted from: <www.sciencedirect.com/science/article/pii/S2272094715300116>]

2.4.1 In your own words, describe the relationship between temperature and plant growth. (3)

2.4.2 Refer to the graph to identify the optimal temperatures for growing broccoli and maize respectively. (2)

2.4.3 Indicate the time of the year suitable to plant broccoli and maize respectively. Provide a reason for your answers. (4)

2.4.4 With an expected rise in global temperatures in the future, indicate the impact on the production of these two crops. Give a reason for your answer. (4)

2.5 2.5.1 Distinguish between a whole-farm budget and an enterprise budget. (2)

2.5.2 Define the concept cash flow budget. (2)

2.5.3 On certain occasions, a farmer might experience problems with regard to poor cash flow in a farming business. Suggest TWO reasons which may cause this problem. (2)

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**QUESTION 3 ENTREPRENEURSHIP, RECORDING, MARKETING,
BUSINESS PLANNING AND ORGANISED AGRICULTURE**

3.1 Study the data for two livestock farmers who are involved in the same farming industry.

FARMER A

Income	Value (R)	Expenditure	Value (R)
Livestock sales	80 000	Purchase of rams	18 000
Wool sales	35 000	Feed	34 000
Sale of kraal manure	9 000	Electricity, water and wages	12 000
		Veterinary care	12 000
		Maintenance	8 000
Total		Total	

FARMER B

Income	Value (R)	Expenditure	Value (R)
Livestock sales	80 000	Purchase of rams	18 000
Wool sales	42 000	Feed	26 000
Sale of kraal manure	15 000	Electricity, water and wages	12 000
		Veterinary care	14 000
		Maintenance	11 000
Total		Total	

3.1.1 Calculate the net profit for FARMER A. (3)

3.1.2 Calculate the net profit for FARMER B. (3)

3.1.3 Identify the more successful farmer between the two. Give THREE reasons for your choice. (4)

3.2 3.2.1 Define the term "depreciation". (2)

3.2.2 A farmer purchases a new tractor for R800 000. The farmer estimates that it will be used for 10 years and then sold for R80 000. Calculate the average depreciation value per year for this tractor. (3)

3.3 A maize producer provides the following information on 12 September 2017.

Value of farm that he owns	R1 300 000
Value of farm house and sheds	R870 000
Cash in hand	R60 000
Stock of seeds	R100 000
Outstanding bank loan	R450 000
Seeds loaned from neighbour	R50 000
Account at local cooperative	R28 000
Balance in the bank	R32 000

3.3.1 Using the template provided on the ANSWER SHEET, compile a balance sheet to determine the net worth. (11)

3.3.2 This farmer has made it a priority to pay all outstanding loans. Explain the possible reason for this decision by the farmer. (2)

3.4 The table below represents the supply and demand schedule of a crop.

Price (R/kg)	Quantity demanded per week (kg)	Quantity supplied per week (kg)	Surplus (kg)	Shortage (kg)
5	800	200		600
10	700	300		400
15	600	400		200
20	500	500		
25	400	600	200	

3.4.1 Using your own words, describe the relationship between product price, product demand and product supply. (3)

3.4.2 Draw a line graph on the attached ANSWER SHEET that represents the supply and demand schedule for the crop. (5)

3.4.3 Determine the price of the product at the point of market equilibrium. (1)

3.4.4 At certain times there is shortage of the product. Give TWO possible reasons for the shortage. (2)

3.4.5 Indicate whether the supply and demand relationship is a feature of a free-market system or controlled marketing system. Explain your answer. (2)

3.5 In order to apply for a loan, a farmer would need to compile a business plan.

3.5.1 Name the SIX main sections or components of a business plan. (6)

3.5.2 Explain the necessity to compile a business plan when applying for a loan. (3)

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QUESTION 4 HARVESTING, PROCESSING, MANAGEMENT AND AGRITOURISM

- 4.1 Read the article below, adapted from *Farmer's Weekly* (14 August 2015) and answer the questions that follow.

From a hawker to an award-winning agro-processing farmer

By Luyolo Mkentane

Entrepreneur Gugu Mlipha went from being a hawker to an award-winning agro-processing farmer with a turnover of R2,4 million/year. Despite her success, she remains firmly hands-on, even driving her company's delivery truck.

Gugu and her daughter Tikholisile with some of the products they produce on their 6 ha farm in Walkerville.



[Photo: Luyolo Mkentane]

A hawker by profession. That's how Gugu Mlipha (38) describes herself, tongue in cheek. Her "entrepreneurial passion", as she describes it, started at age 12. "I sold vegetables at taxi ranks near Newcastle in KwaZulu-Natal, where I was raised by my grandmother. I'd bunk school just to do so," she recalls.

Today, she runs the R2,4 million/year farming and agro-processing business Gugu & Daughters Farming in Walkerville near Vereeniging. Gugu came to Johannesburg in the early 1990s where she completed her

schooling and later obtained a diploma in banking from Damelin.

However, her heart lay in growing and selling fresh produce. So in 2002, Gugu and her husband Naphtali, decided to take the plunge. Using their life savings, they bought a rundown 6 ha farm in Walkerville for about R300 000. It was a gamble that would change their lives forever.

Fruit and veggies

Gugu sources 60% of her fruit and vegetables from fellow farmers in the Walker Fruit Farms area. The balance she grows herself. Crops include baby corn, baby marrow, pattypan, cauliflower, spinach, broccoli and herbs. Naphtali is responsible for the production side of the operation, while Gugu is packhouse manager and takes care of marketing and distribution.

She is also the farm's delivery driver. The couple has two daughters, both of whom are involved in the business. The farm processes stir fries, soup mixes (a variety of carrots, butternut, green beans, celery and leeks), fruit mixes and potatoes. The raw produce is prepared and cut according to clients' specifications at the farm's packhouse.

Market success

Satisfied customers include the Birchwood Hotel & Conference Centre, the Soweto Hotel on Freedom Square and the Maslow Sun International Hotel. Gugu & Daughters Farming supplies public hospitals in the greater Johannesburg area; the Boksburg Prison; and Pick n Pay outlets in Heidelberg, Meyerton and Brackenhurst.

Asked how she succeeded in gaining so many clients, Gugu explains: "I started by farming and selling spinach and tomatoes, which were a hit with customers in Meyerton. But when I started producing broccoli, cauliflower and lettuce, I had no market. I had to look for it."

Gugu did this by simply going through the Yellow Pages and calling all the hotels to see if they were interested in buying her produce. The Birchwood Hotel asked her to bring some samples – and she has never looked back. The Department of Agriculture, Forestry and Fisheries (DAFF) noticed Gugu in 2012.

"They approached me to supply some hospitals," she recalls. "I put in my bid and qualified. The SA Agri Academy taught me about food safety and good agricultural practices. We are HACCP-compliant and are audited in a process in which the authorities check the chemicals we use to clean the packhouse, how packaging is done, and how we manage personal hygiene.

"We're audited every month, or as per the client's request. We also compile and keep all food safety records."

Organic principles

The farm, which has 15 full-time employees, has a cold room and processing equipment, including a vegetable cutter, spin dryer, potato peeler and a vegetable washing machine sponsored by DAFF. "We don't have a tractor. Everything is done by hand," says Gugu. "We farm according to organic principles, but we're not certified organic just yet. Applying organic principles means we use organic fertiliser instead of chemical fertiliser.

"We label each product for traceability purposes," she explains. "In the unlikely event of someone, say, suffering from an upset stomach after eating produce we supplied, it's easy to check where the produce came from. In turn we can check how and when it was produced, having all the information about the product at our fingertips. The expiry date is also clearly visible."

The future

Her long-term goal is to expand the packhouse into a big processing plant and be accredited to cater for the airline industry. "I want to increase my annual turnover from R2,4 million to R5 million in the next few years," she says. Her advice to those considering a career in farming is to the point and carries much common sense. "Have a clear business plan. Execute it. Be passionate. Don't go into farming for the love of money, but you must be profit-driven."

[Source: *Farmer's Weekly*, 14 August 2015]

- 4.1.1 Gugu Mlipha is an example of a successful entrepreneur. From the article, identify SIX characteristics of an entrepreneur. (6)
- 4.1.2 Gugu describes the way she started as a hawker and later developed a formal marketing channel. Compare these two marketing channels in terms of the following criteria:
- (a) Volume of product marketed (2)
 - (b) Value of product marketed (2)
 - (c) Profitability (2)
- 4.1.3 List FIVE management roles that Gugu would need to perform in her role as packhouse manager. (5)
- 4.1.4 Operating a packhouse requires a variety of equipment and infrastructure. Identify in the article FIVE pieces of equipment or infrastructure that are used in the agro-processing business. (5)
- 4.1.5 Gugu mentions the importance of product labelling.
- (a) Explain why it is important to label processed goods. (2)
 - (b) List FOUR types of information that should be included on a product label. (4)
- 4.1.6 The article mentions a number of quality control measures that are implemented in the business.
- (a) Give TWO important reasons for maintaining a quality assurance system in this type of business. (2)
 - (b) From the article, list FOUR types of quality assurance measures that are mentioned in the article. (4)
- 4.1.7 Indicate whether this particular business can be classified as an AgriBEE enterprise. Use information from the article to support your answer. (2)

4.2 Refer to the two adverts for farm sales and answer the questions that follow.

FARM A

Selling price	R21 000 000
Location	Uniondale, Western Cape
Farm size	1 155 ha <ul style="list-style-type: none"> This includes 600 ha of game reserve with enclosed 2,4 m high electrified fence
Game and livestock	<ul style="list-style-type: none"> A herd of 40 disease-free Cape buffalo Other game: blesbok, eland, fallow deer, gemsbok, grey rhebok, red hartebeest, springbok, ostrich, zebra 3 horses trained
Facilities	<ul style="list-style-type: none"> Boma for handling game 3-star guest house and Cape Dutch-style lodge Conference facility for 70 delegates Equestrian facilities, 4 stables, store rooms and tack room
Farm developments	<ul style="list-style-type: none"> Water from perennial fountain in mountains 5 Storage dams with \pm 330 000 cubic meters storage 10 ha lucerne under gravity irrigation from dam 10 ha irrigable land on mainline Additional 3 boreholes delivering 20 000 litres/hour \pm 110 ha dry land
Vehicles and implements	<ul style="list-style-type: none"> Toyota Hilux 4 x 4 Game View Vehicle (2006) Toyota Hilux 2.5 Double Cab (2006) FORD 85 DT Tractor (2009) Husqvarna TLB Bush clearing equipment Haymaking equipment

FARM B

Selling price	R2 960 000
Location	Britstown, Northern Cape (Central Karoo)
Farm size	1 400 ha mixed karoo veld <ul style="list-style-type: none"> Vlei-type veld mixed with karoo bushes. Grass in places. Small section of mountain Carrying capacity \pm 6 ha per small stock unit
Farm developments	<ul style="list-style-type: none"> Divided into 6 camps, all with water troughs Jackal-proof fencing on 2 sides of the farm; the rest is stock-proof Employed a good rotational grazing plan There are no buildings but has potential for development
Water supply	2 windmills, 4 boreholes for potential small irrigation! Average rainfall \pm 260 mm per year No electricity
Farming potential	Sheep, goats, cattle, ostriches or game

- 4.2.1 Calculate the land price (rand per ha) for FARM A and FARM B. (4)
- 4.2.2 Deduce from the information provided, the reasons for the different land values of the two farms. (6)
- 4.2.3 Identify between the two farms the one developed for agritourism. Provide THREE reasons for your answer. (4)

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150 marks

Total: 200 marks