



education

Department:
Education
North West Provincial Government
REPUBLIC OF SOUTH AFRICA

PROVINCIAL ASSESSMENT

GRADE 10

**AGRICULTURAL SCIENCES P1
NOVEMBER 2024**

MARKS: 150

TIME: 2½ hours

This question paper consists of 14 pages.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of TWO sections, namely SECTION A and SECTION B.
2. Answer ALL the questions in the ANSWER BOOK.
3. Start EACH question on a NEW page.
4. Number the answers correctly according to the numbering system used in this question paper.
5. You may use a non-programmable calculator.
6. Show ALL calculations, including formulae, where applicable.
7. 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 write only the letter (A–D) next to the question numbers (1.1.1–1.1.10) in the ANSWER BOOK, e.g. 1.1.11 B.

1.1.1 ONE of the following is NOT part of the levels of organisation in ecology:

- A Population
- B Biome
- C Atmosphere
- D Biosphere

1.1.2 An example of predation:

- A Nodules of rhizobium bacteria on the root of a legume plant
- B Sheep and cows competing for food
- C Remora fish swimming with a shark
- D A ladybird preying on an aphid

1.1.3 Grazing system that comprises one or two camps with a mixture of livestock such as cattle, sheep, goats and donkeys:

- A Rotational grazing
- B Continuous grazing
- C Communal farming
- D Game farming

1.1.4 The following are the main agricultural sources of nitrous oxide:

- (i) Application of synthetic nitrogen fertilisers
- (ii) Application of manure fertilisers
- (iii) Decomposition of stored solid and liquid manure
- (iv) Wet soils that contain nitrogen-fixing plants

Choose the CORRECT combination:

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

1.1.5 A type of farming that feeds only a farmer and his or her family:

- A Subsistence agriculture
- B Commercial agriculture
- C Industrial agriculture
- D Intensive agriculture

1.1.6 The following are the impacts of population growth on the agricultural sector:

- (i) Less food can be produced
- (ii) Natural resources are degraded and depleted
- (iii) Demand for food increases
- (iv) Demand for food decreases

Choose the CORRECT combination:

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

1.1.7 The law that aims to prevent diseases in livestock animals and meat:

- A Agricultural Pests Act
- B Meat Safety Act
- C Animal Diseases Act
- D Basic Conditions of Employment Act

1.1.8 ONE of the following is NOT a role of the Agricultural Research Council:

- A Sustain a competitive agricultural economy
- B Provide new economic opportunities
- C Ensure low-quality and unsafe food
- D Contribute to a better quality of life

1.1.9 A feature of indigenous cattle breeds:

- A. Thick and hairy skin
- B Shorter in height
- C Smaller body mass
- D Huge body mass

1.1.10 ONE of the animals listed below, belongs to the game animals known as The Big Five:

- A Eland
- B Rhino
- C Kudu
- D springbok

(10 x 2) (20)

- 1.2 Indicate whether each of the descriptions in COLUMN B applies to **A ONLY**, **B ONLY**, **BOTH A AND B** or **NONE** of the items in COLUMN A. Write **A only**, **B only**, **both A and B** or **none** next to the question numbers (1.2.1–1.2.5) in the ANSWER BOOK, e.g. 1.2.6 B only.

COLUMN A			COLUMN B
1.2.1	A:	Altitude	The height of the land above sea level
	B:	Slope	
1.2.2	A:	Sub-climax stage	Plants that are adapted to very unfavourable conditions start to grow in the bare soil
	B:	Pioneer stage	
1.2.3	A:	Food security	Lack of proper nutrition, inadequate nutrients such as vitamins and minerals
	B:	Malnutrition	
1.2.4	A:	Valuta	Food that is in over-supply is sold and transported to other countries
	B:	Demand	
1.2.5	A:	Pinzgauer	Breeds of cattle that are used for meat and milk production
	B:	Red Poll	

(5 x 2) (10)

- 1.3 Give ONE word/term for each of the following descriptions. Write only the word/term next to the question numbers (1.3.1 to 1.3.5) in the ANSWER BOOK.

1.3.1 The area of land that a farmer allows per animal

1.3.2 Knowledge that the local people have about the area based on the years of experience

1.3.3 The group of animals with monogastric stomachs

1.3.4 The type of egg production where hens are in small wire cages, it is costly and labour intensive

1.3.5 Pig breeds that were developed from other countries and are imported into this country

(5 x 2) (10)

1.4 Change the underlined word/s in each of the following statements to make them TRUE. Write only the answer next to the question numbers (1.4.1 to 1.4.5) in the ANSWER BOOK.

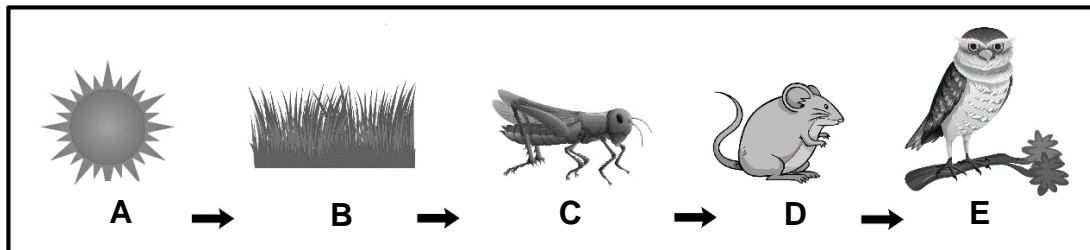
- 1.4.1 An ecological community that covers a large area of land and is characterised by a particular type of plant is known as pasture.
- 1.4.2 Communal land is owned by government departments as well as provincial and local municipalities.
- 1.4.3 Dairy goat breeds produce nutritious meat with a higher solid substance content that include protein, sugars and cream.
- 1.4.4 Riding horse breeds are kept for their strength to help pull wagons or for any other job that needs strength.
- 1.4.5 Trophy hunting is the illegal act of killing wild animals for their teeth, horns or other valuable parts. (5 x 1) (5)

TOTAL SECTION A: 45

SECTION B**QUESTION 2: AGRO-ECOLOGY**

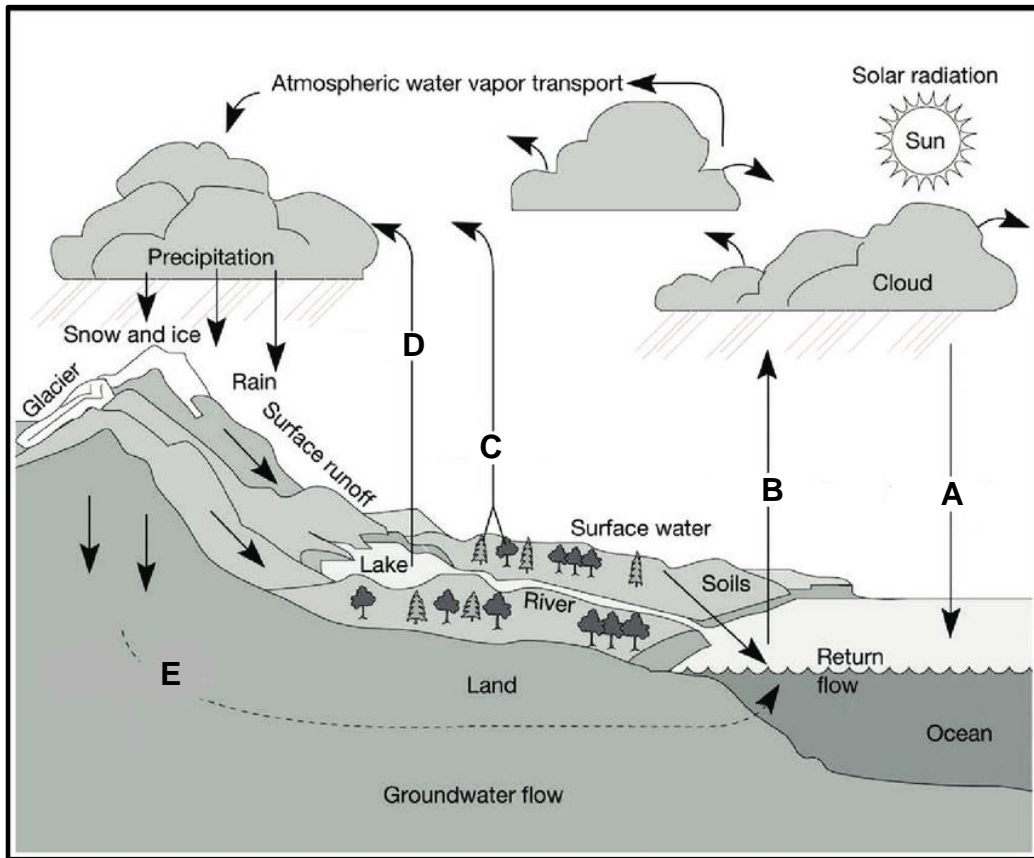
Start this question on a NEW page.

- 2.1 The diagram below shows the energy flow in the ecosystem through the interaction of different organisms.



- 2.1.1 Identify the type of energy flow illustrated in the diagram above. (1)
- 2.1.2 Indicate the number of trophic levels on the diagram. (1)
- 2.1.3 Identify the letter from the diagram that matches the following descriptions:
- (a) Radiant energy is converted to chemical energy through the process of photosynthesis (1)
 - (b) Herbivores pass the energy to secondary consumers through predation (1)
 - (c) Interspecific competition takes place between tertiary consumers (1)
- 2.1.4 Explain how the energy is transferred from the organisms in letter **D** to the organisms in letter **C**. (2)
- 2.1.5 Name **THREE** abiotic components required by the organisms in letter **D** to sustain the energy flow in the above ecosystem. (3)

2.2 The diagram below shows nutrient cycle.



2.2.1 Identify the type of nutrient cycle in the diagram above. (1)

2.2.2 Identify processes **A**, **C** and **E** in the diagram. (3)

2.2.3 Mention the main source of water. (1)

2.2.4 Deduce THREE ways in which water is returned to the atmosphere. (3)

2.2.5 Explain how human activities like deforestation can impact the water cycle. (2)

2.3 Complete the following table comparing sour veld and sweet veld. DO NOT RE-DRAW the table.

FACTOR	SOUR VELD	SWEET VELD
Rainfall	2.3.1	2.3.2
Palatability	2.3.3	2.3.4
Nutritive value	2.3.5	2.3.6

(6)

2.4 Choose an explanation from the list below that matches the biomes in QUESTIONS 2.4.1 to 2.4.5. Write only the letter (A–E) next to the question numbers (2.4.1 to 2.4.5) in the ANSWER BOOK.

- A Grassland biome
- B Fynbos
- C Forest Biome
- D Savannah
- E Nama-Karoo

2.4.1 Mutton and beef farmers will get optimum production (1)

2.4.2 Grapes are planted for wine processing factories (1)

2.4.3 Pine and eucalyptus plants are harvested for timber (1)

2.4.4 Browsers such as goats and game animals are raised (1)

2.4.5 Predominantly dwarf shrubs and succulent plants that have adapted to the dry conditions (1)

2.5

South Africa's average temperatures are already rising faster than the global average. This can lead to more heatwaves, droughts, and wildfires.

2.5.1 Name TWO causes of climate change. (2)

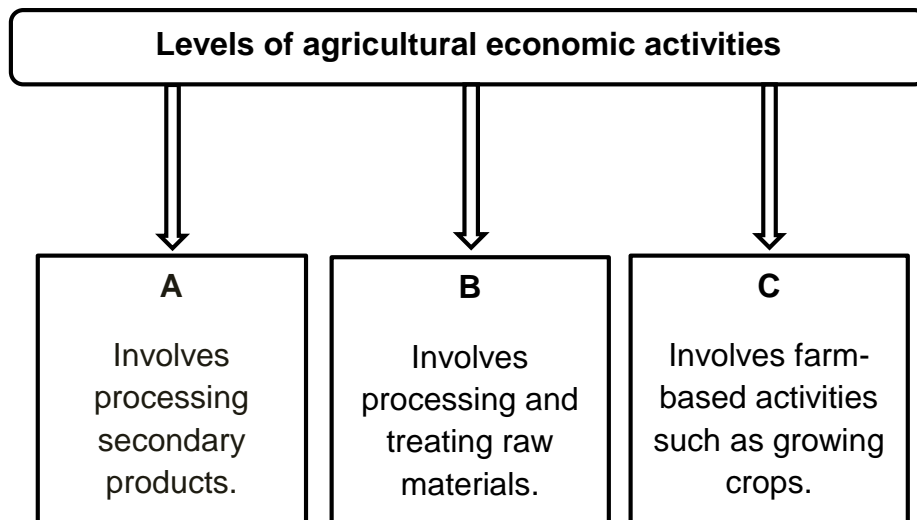
2.5.2 Suggest TWO ways in which farmers in South Africa can adapt to climate change. (2)

[35]

QUESTION 3: AGRI-INDUSTRY

Start this question on a NEW page.

3.1 The schematic representation below shows agricultural economic activities.



3.1.1 Identify the levels of agricultural economic activities represented by **A**, **B** and **C** in the schematic representation above. (3)

3.1.2 Provide ONE example for EACH of the levels of agricultural economic activities identified in QUESTION 3.1.1. (3)

3.1.3 Recommend THREE ways in which production of agricultural goods contributes to the economy of the country. (3)

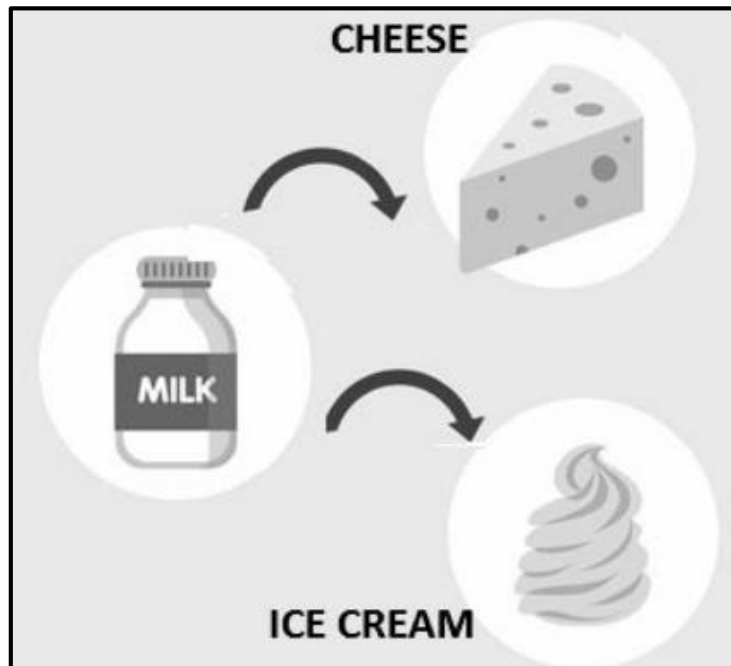
3.2 The table below indicates the population growth in South Africa from 2019 to 2023.

YEARS	POPULATION GROWTH (millions)
2019	57
2020	58
2021	59
2022	60
2023	61

3.2.1 Calculate the difference in population between 2019 and 2022. (2)

3.2.2 Plot a bar graph showing the population growth in South Africa from 2019 to 2023. (6)

3.3 The picture below illustrates a food transformation process.



- 3.3.1 Identify the process depicted in the picture above. (1)
- 3.3.2 Identify ONE milk-derived product from the picture above. (1)
- 3.3.3 Give TWO advantages of processing agricultural foodstuffs. (2)
- 3.3.4 Distinguish between fresh food and staple food. (2)

3.4

Labour Laws; Land and Land Reform Acts; Marketing laws;
Resource protection laws; Diseases and chemicals laws

- 3.4.1 Identify a law from the list above that matches each of the following laws below:
 - (a) Environmental Conservation Act (1)
 - (b) Agricultural Pests Act (1)
 - (c) Occupational Health and Safety Act (1)
 - (d) Biodiversity Act (1)
 - (e) Extension of Security of Tenure Act (1)
- 3.4.2 Name TWO aims of agricultural legislation. (2)

3.5

The NAMC is a South African government entity responsible for promoting market access for the country's agricultural sector. It plays a crucial role in supporting a vibrant agricultural marketing system by providing advisory services to key stakeholders.

3.5.1 Give the name of the underlined abbreviation in full. (1)

3.5.2 Identify the role of the NAMC from the scenario above. (2)

3.5.3 Provide TWO benefits of nationally recognised agricultural organisations for individual farmers. (2)

[35]

QUESTION 4: ANIMAL STUDIES

Start this question on a NEW page.

4.1 Animals play an important role in the environment.

4.1.1 Indicate THREE examples of the economic importance of animals. (3)

4.1.2 State TWO traditional examples of the importance of cattle. (2)

4.2 The table below shows information on by-products in farm animals.

TYPE OF ANIMAL	RAW PRODUCT	BY-PRODUCT
All domestic farm animals	Bones	A
	C	Farm manure
Cattle	Hooves	D
B	Hair	Bristle
Chickens	E	Feather meal

4.2.1 Use the information in the table above to identify **A**, **B**, **C**, **D** and **E**. (5)

4.2.2 Define the term *by-product*. (2)

4.2.3 Give TWO main products of chickens. (2)

4.3 The table below shows different types of cattle breeds.

GROUP A	GROUP B
<ul style="list-style-type: none"> • Jersey • Friesland • Holstein • Simmentaler 	<ul style="list-style-type: none"> • Brahman • Nguni • Hereford • Bonsmara

4.3.1 Classify the cattle breeds in **GROUP A** and **GROUP B** from the table above into beef breeds and dairy breeds. (2)

4.3.2 Explain the answers to QUESTION 4.3.1. (2)

4.3.3 Identify TWO indigenous beef breeds in the table above. (2)

4.3.4 Refer to the table above and identify the breed with the following qualities:

(a) Produces high-quality milk with high butter fat content (1)

(b) Produces white milk with low butter fat content (1)

4.3.5 Suggest the other THREE beef breeds not mentioned in the table. (3)

4.4

lamb; milk; eggs; broiler; capon; pork; veal; mutton; beef; caviar
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4.4.1 Identify the product from the table above that best matches to the following animals:

(a) Meat from a cow younger than three months. (1)

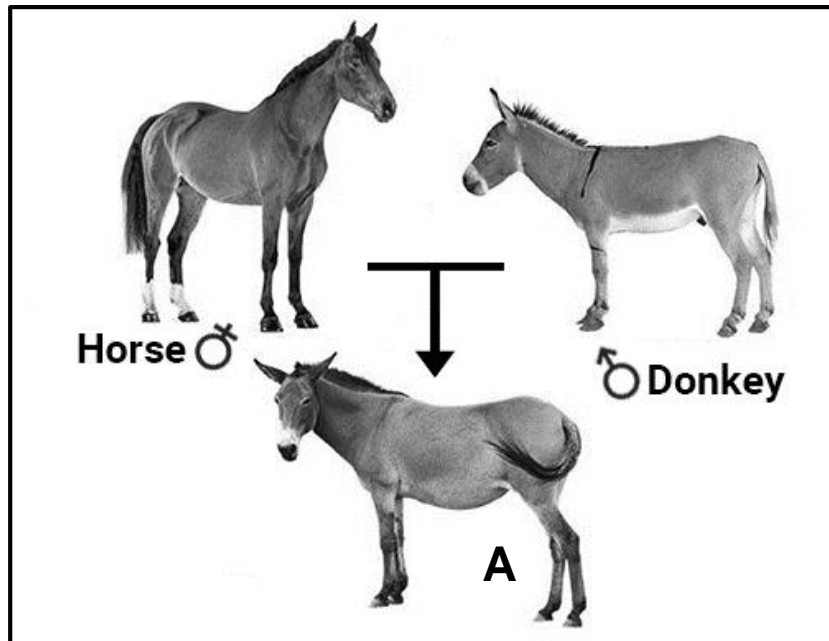
(b) Sheep younger than 1 year (1)

(c) Swine (1)

(d) Chickens younger than 12 weeks (1)

(e) A neutered male chicken (1)

4.5 The picture below shows farm animals.



- 4.5.1 Identify animal **A** in the picture above. (1)
- 4.5.2 Identify the gender of horse in the picture above. (1)
- 4.5.3 Provide THREE main characteristics of animal **A**. (3)
- [35]**

TOTAL SECTION B: 105
GRAND TOTAL: 150