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**NATIONAL  
SENIOR CERTIFICATE**

**GRADE 10**

**NOVEMBER 2018**

**AGRICULTURAL SCIENCES P1**

**MARKS: 150**

**TIME: 2½ hours**

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This question paper consists of 13 pages.

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## **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 correct answer and write only the letter (A–D) next to the question number (1.1.1–1.1.10) in the ANSWER BOOK, for example 1.1.11 D.

1.1.1 This farming involves the commercialisation of wildlife by private land owners:

- A Poultry farming
- B Game farming
- C Livestock breeding
- D Conservation farming

1.1.2 The number of animals that can be allocated to a certain area for a specific period:

- A Animal ratio
- B Stocking rate
- C Grazing rate
- D Selective grazing

1.1.3 When vapour changes back to liquid:

- A Condensation
- B Transpiration
- C Evaporation
- D Sublimation

1.1.4 Part of the earth where living organisms exist, including the upper part of the soil, the water bodies and the lower parts of the air:

- A Biome
- B Ecosystem
- C community
- D Biosphere

1.1.5 This trophic level contains the most energy:

- A First
- B Second
- C Third
- D Fourth

1.1.6 The process by which regional economies, societies, and cultures have become integrated through communication, transportation, and trade:

- A Global demand
- B Global warming
- C Globalisation
- D Urbanisation

1.1.7 The weather conditions prevailing in an area in general or over a long period:

- A Climate
- B Weather
- C Rain
- D Sunlight

1.1.8 The laws of a country, as determined by the law-making sector part of government, such as parliament:

- A Green paper
- B White paper
- C Legislation
- D Legal framework

1.1.9 This combination is an example of indigenous beef breeds:

- (i) Afrikaner
- (ii) Drakensberger
- (iii) Brahman
- (iv) Bonsmara

Choose the correct combination:

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

1.1.10 These are examples of meat goat breeds except ...

- A Boer goat.
- B Saanen.
- C Savanna.
- D Kalahari.

(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 number (1.2.1–1.2.5) in the ANSWER BOOK, for example 1.2.6 B only.

COLUMN A			COLUMN B
1.2.1	A:	Land reform	Returning land to people who were forcibly removed
	B:	Land restitution	
1.2.2	A:	State land	Private land ownership
	B:	Communal land	
1.2.3	A:	El Niño	Sea surface temperatures in the equatorial Pacific become cooler than normal
	B:	La Niña	
1.2.4	A:	Large white	Examples of bacon breeds
	B:	Land race	
1.2.5	A:	Livestock	Biotic factors
	B:	Vegetation	

(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 number (1.3.1–1.3.5) in the ANSWER BOOK.

1.3.1 The total value of all goods and services produced by a country in a year

1.3.2 The process that involves bringing food from the stomach back to the mouth for chewing and swallowing again

1.3.3 Measure of an animal's efficiency to convert food mass into body mass.

1.3.4 Breeds that are mainly kept for wool, meat or both.

1.3.5 A diagram that shows the trophic levels in an ecosystem

(5 x 2) (10)

- 1.4 Change the UNDERLINED WORD/S in each of the following sentences to make them TRUE. Write only the answer next to the question number (1.4.1–1.4.5) in the ANSWER BOOK.

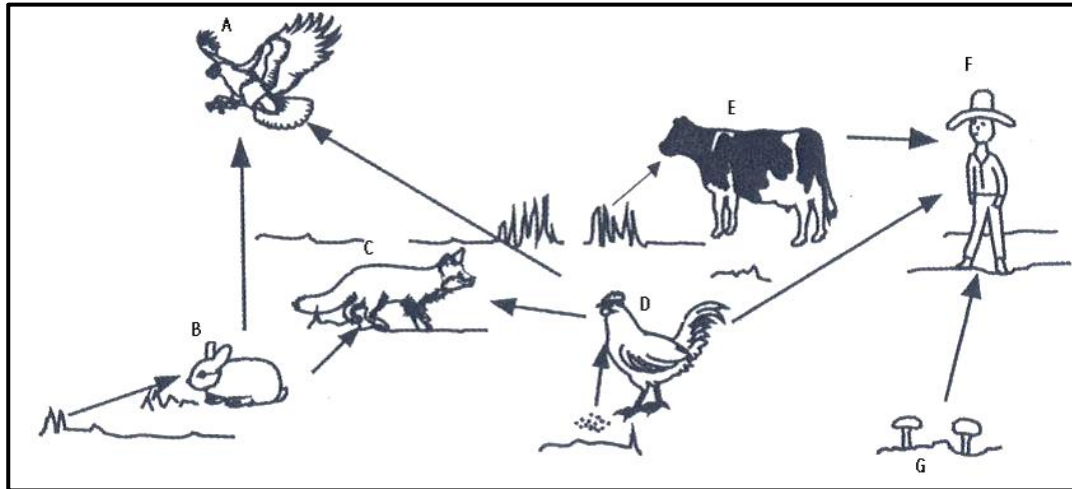
- 1.4.1 The variety of life in the world or in a particular habitat or ecosystem is called biosphere.
- 1.4.2 Income is the wealth and resources of a country or region, especially in terms of production and consumption of goods and services.
- 1.4.3 The form of land ownership where people, groups or private companies own a piece of land, is known as lease hold.
- 1.4.4 The National Water Act, Act no. 36 of 1998, is an example of land law.
- 1.4.5 Browsers are animals that eat grass and other low lying vegetation. (5 x 1) (5)

**TOTAL SECTION A: 45**

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

Start this question on a NEW page.

2.1 Study the diagram below and answer the questions that follow.



2.1.1 Supply a suitable heading for the diagram in QUESTION 2.1. (1)

2.1.2 Indicate a LETTER representing:

(a) Primary consumers (1)

(b) Predators (1)

2.1.3 Briefly describe the changes that will take place in the ecosystem if organism C is removed. (2)

2.1.4 Mention any TWO biotic factors in the diagram in QUESTION 2.1. (2)

2.2 Forest biome is the smallest biome in South Africa and covers only 0,37% of the land. South Africa has only temperate forests. They are the Knysna forest, the Tsitsikama forest and those in Kwazulu-Natal. The remaining forest patches in South Africa face a range of general threats such as farming (clearing of forest) and spread of invasive alien species.

2.2.1 Identify ONE threat to the forest biome from the scenario in QUESTION 2.2. (1)

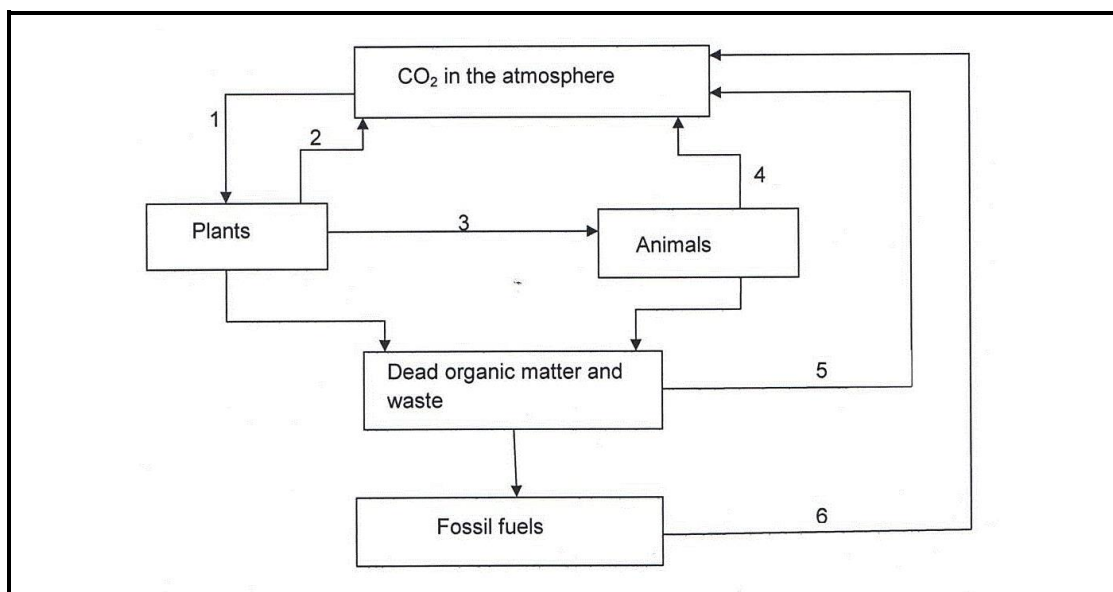
2.2.2 Suggest TWO other threats that are not mentioned in the scenario in QUESTION 2.2. (2)

2.2.3 Give TWO reasons for the importance of the forest biome in agriculture. (2)

2.2.4 State THREE other biomes of South Africa. (3)



2.3 The schematic representation below illustrates nutrient recycling.



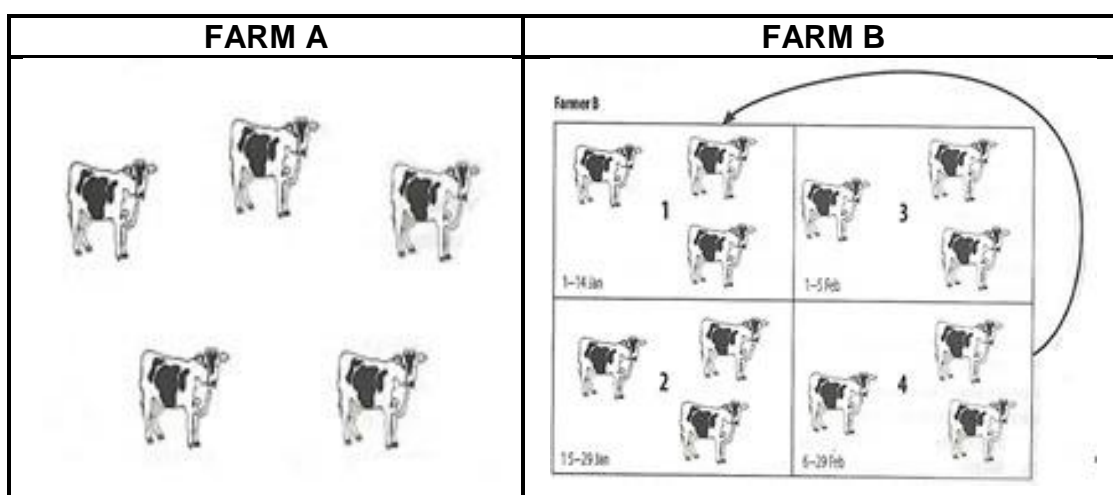
2.3.1 Identify the type of nutrient cycle in the diagram in QUESTION 2.3. (1)

2.3.2 Mention the main source of carbon. (1)

2.3.3 Provide labels for the processes numbered 1 and 6. (2)

2.3.4 Deduce THREE ways in which carbon dioxide is returned to the atmosphere. (3)

2.4 Study the illustrations of two farmers' veld management practices and answer the questions that follow.



2.4.1 Identify the grazing systems represented by FARM A and FARM B. (2)

2.4.2 Indicate the farm with minimum management input. (1)

2.4.3 Deduce the farm with a low stocking rate. Motivate your answer. (2)

2.4.4 Give THREE practices that lead to poor veld condition. (3)

- 2.5 The earth's average temperature has already risen by about 0,74 °C since 1906. Scientists predict that it will continue to rise by 0,2 °C each decade for the next two decades. After that global warming will depend on the amount of greenhouse gases we continue to release. Increased temperatures are predicted to cause rises in sea level, more extreme weather and changes in ecosystems.

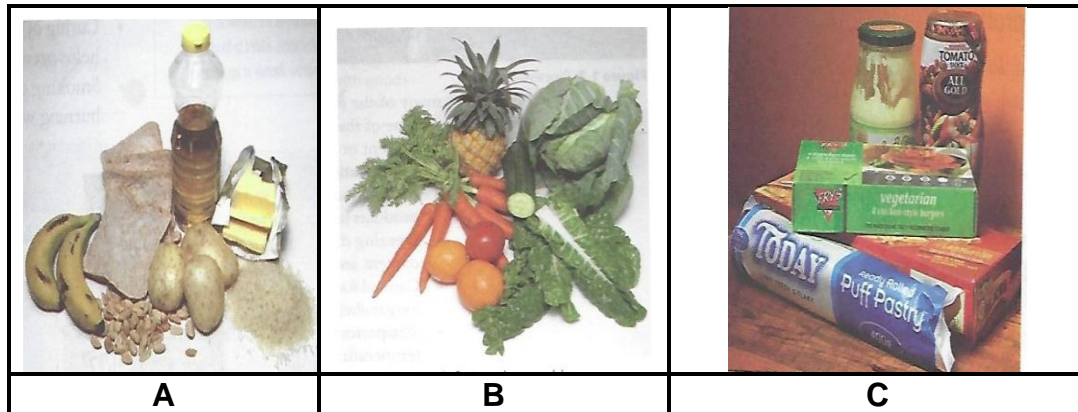
- 2.5.1 Explain the underlined term in the scenario above (2)
- 2.5.2 Identify TWO disadvantages of climate change in the scenario above. (2)
- 2.5.3 Give any agricultural adaptation measure farmers have to take to reduce the impact of climate change. (1)

**[35]**

**QUESTION 3: AGRI-INDUSTRY**

Start this question on a NEW page.

- 3.1 The diagrams below illustrate the classification and utilisation patterns of food products in South Africa.



- 3.1.1 Classify the foods in diagram **A**, **B** and **C** according to utilisation patterns. (3)
- 3.1.2 Supply THREE advantages of the type of food labelled **C**. (3)
- 3.1.3 Indicate the letter that best fits the following descriptions:
- (a) Normally not too expensive (1)
  - (b) Raw fresh produce is transformed into other forms that can be consumed by humans and animals (1)
  - (c) Food that farmers harvest and then sell just as they are (1)
  - (d) Supply most of the energy needs (1)

- 3.2 South Africa is rich in indigenous plants. Many of these plants have traditional medicinal value and can also be used to treat livestock. Sustainable farmers make use of these plants as remedies to treat animals, because they are cheap and easy to collect. Unfortunately, many of these plants can become extinct if they are not used in a sustainable manner. With an increase in demand for these indigenous plants, protective measures must be put in place.

The legume-forming herb called *Sutherlandia frutescens* (cancer bush) is also becoming well-known as the 'Aids bush'. This bush was used historically by the Nama and Khoi to make creams from powdered pastes to heal infections. It has been used to treat cancer for hundreds of years, and is administered by drawing a tea extract from the leaves. With recent advances in technology, the powdered leaves are now sold in chemists in pill form.

- 3.2.1 Identify THREE different forms in which the cancer bush can be used. (3)
- 3.2.2 Name the regions where this plant grows naturally according to the information given in the scenario in QUESTION 3.2. (2)
- 3.2.3 Deduce the common vegetable that is family of this plant. (1)
- 3.2.4 Give TWO characteristics of indigenous knowledge. (2)
- 3.2.5 Do you think that this bush has a marketing value? Give a reason for your answer. (2)

3.3 The CSIR was founded in 1945. It is one of the leading scientific and technology research, development and implementation organisations in Africa and is represented in parliament by the Minister of Science and Technology. It strives to provide science-based solutions to the challenging environmental and natural resource issues that face the population at present and in the future. It also improves competition in the global market.

- 3.3.1 Give the name of the underlined abbreviation in full. (1)
- 3.3.2 Identify TWO aims of the CSIR from the scenario above. (2)
- 3.3.3 Provide THREE benefits of nationally recognised agricultural organisations for individual farmers. (3)

3.4 Communal is land in the previously called 'native reserves' and occupies about 17% of the total farming area in Africa. The land is not owned by an individual, but rather by an extended family or village community.

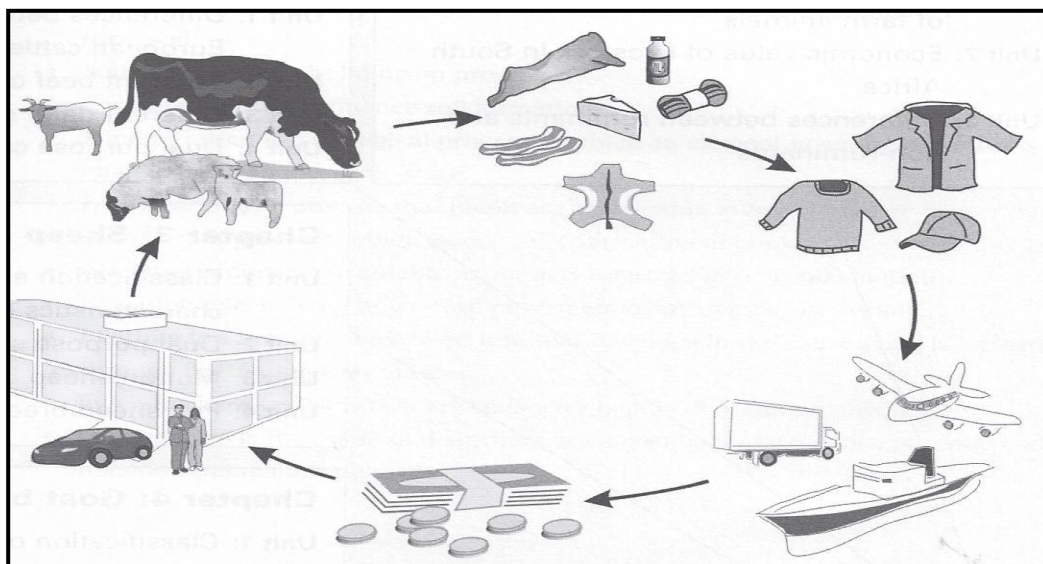
- 3.4.1 Suggest TWO uses of communal land. (2)
- 3.4.2 Give THREE problems associated with communal land. (3)
- 3.4.3 Distinguish between *state land* and *private land ownership*. (4)

**[35]**

**QUESTION 4: ANIMAL STUDIES**

Start this question on a NEW page.

- 4.1 The diagram below indicates some of the economic importance of domestic animals.



- 4.1.1 Indicate THREE examples of the economic importance of animals from the picture in QUESTION 4.1. (3)
- 4.1.2 State TWO traditional examples of the importance of cattle in South Africa that are NOT in the diagram above. (2)

- 4.2 Sheep breeds can be classified based on their utilisation or uses to the farmer and the consumer.

- 4.2.1 Classify the following sheep breeds into meat, pelt and wool breeds: (1)
- (a) Karakul (1)
  - (b) Merino (1)
  - (c) Dorper (1)
- 4.2.2 Tabulate THREE differences between mohair and wool fibres. (6)

- 4.3 Supply the correct terminology for the animal species in the table below.  
Write the question number and the answer in your ANSWER BOOK.

Species	Adult male	Castrated male	Adult female	Young female	Young
Cattle		4.3.1		4.3.2	
Sheep			4.3.3		
Chicken		4.3.4			
Pig					4.3.5
Goat	4.3.6				

(6 x 1) (6)

- 4.4 A mule is the offspring of crossing two different species.

4.4.1 Give the TWO parents of a mule. (2)

4.4.2 Provide THREE main characteristics of mules. (3)

- 4.5 The following table shows the average milk production of dairy breeds

Dairy breed	Milk (ℓ)			Butter fat %		
	2000	2004	2008	2000	2004	2008
Friesland	9 200	8 700	12 400	7,16	6,80	5,90
Jersey	7 800	7 500	7 900	9,45	9,10	8,75
Brown Swiss	8 100	8 100	9 800	8,85	6,29	6,29
Simmentaler	8 400	8 400	8 888	7,38	6,51	8,55

4.5.1 Plot a bar graph showing the average milk production of dairy breeds in 2008. (6)

4.5.2 Identify the dairy breed that produced the second highest volume of milk over the three production seasons. (1)

4.5.3 Indicate the dairy breed has the highest production of milk but the lowest percentage butterfat. (1)

4.5.4 State the breed that you would recommend to produce cream for a butter factory. Motivate your answer. (2)

**[35]****TOTAL SECTION B: 105****GRAND TOTAL: 150**