



AGRICULTURAL SCIENCES

REVISION BOOKLET

TERM 1

2026

Grade 10

This revision program is designed to assist you in revising the critical content and skills covered from term one. The purpose is to prepare you to understand the key concepts and to provide you with an opportunity to establish the required standard and the application of the knowledge necessary to succeed in the NCS examination.

The revision program covers the following topics:

- Agricultural Ecology
 - Veld Management
 - Grazing Ecology
 - Pasture Science
 - Biomes
- Agricultural Economics
 - Introduction to Agricultural Economics

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Ecology and Agro- Ecology:

- Basic concepts
- Levels of ecological organization
- Components of an Ecosystem

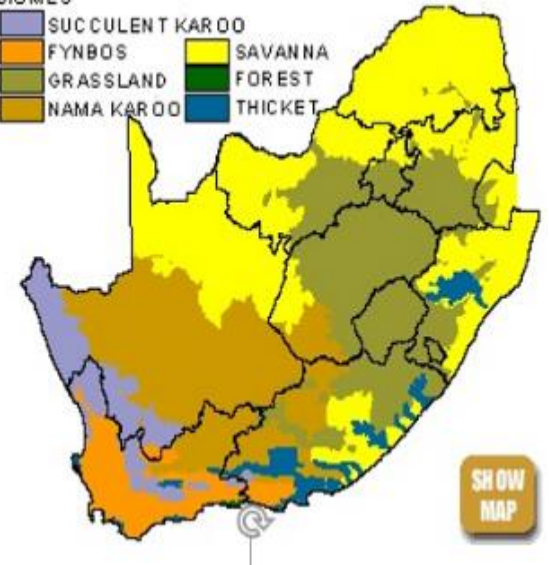
Interactions in Ecosystems:

- Energy flow in Ecosystems
- Nutrient cycling
- Interactions between organisms
- Ecological farming methods

Biomes:

BIOMES

- | | |
|---|---|
|  SUC CULENT KAR OO |  SAVANNA |
|  FYNBOS |  FOREST |
|  GRASSLAND |  THICKET |
|  NAMA KAR OO | |



- Biomes and their characteristics
- Human impact
- Importance for agriculture

Grazing Ecology:

- Natural and Artificial Pastures
- Grazing ecology
- Optimal Grazing
- Veld types of South Africa
- Characteristics of grazing plants
- Condition of pastures

Pasture and Veld Management:

- Importance of pastures for the livestock industry in SA
- Pasture management and Pasture condition
- Veld Management Practices
- Veld Management Systems
- Different grazing Systems
- Veld management that leads to poor veld conditions



Agro-Ecology

Climate change and the effect of weather phenomena:

- Causes of global warming
- Impact of climate change on agriculture
- Long term weather predictions and rainfall patterns
- Short term climate and weather predictions
- Agricultural adaptation measures to overcome climate change

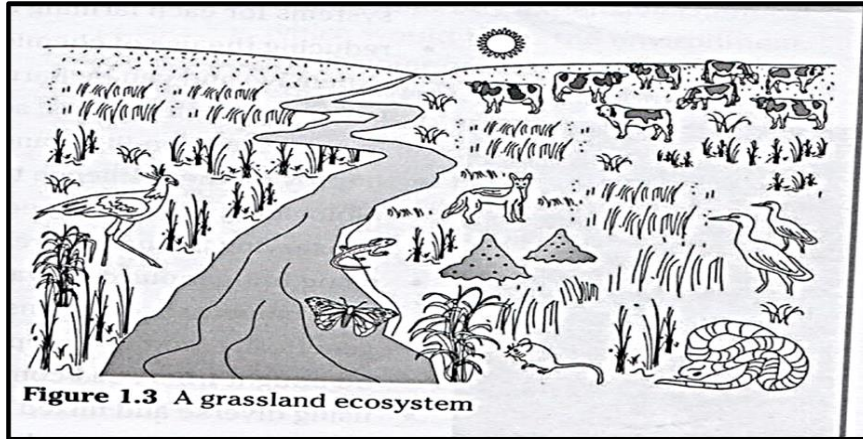
Term 1: Agro- Ecology: Week 1 & 2

1. The box below shows the different aspects of an ecological organisation. Arrange them in different levels starting with the smallest to the largest level in the organization

Ecosystem, Community, Population, Biome, Individual, Biosphere

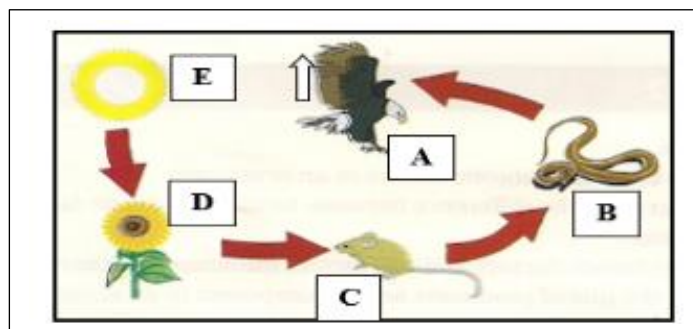
(6)

2. The diagram below illustrates a grassland ecosystem. Study it carefully and answer the questions that follow:



- 2.1 Tabulate any TWO biotic and TWO abiotic components which are visible in the diagram (4)
- 2.2 Formulate a food chain from the components in the system (4)
- 2.3 From the above diagram indicate one each of the following: (4)
- a) Producer
 - b) Primary consumer
 - c) Secondary consumer
 - d) Carnivore
- 2.4 List THREE climatic factors that will have an influence on the organisms in the diagram (3)

The following schematic representation represents some of the interactions between organisms in an ecosystem



2.5 Name the diagram. (1)

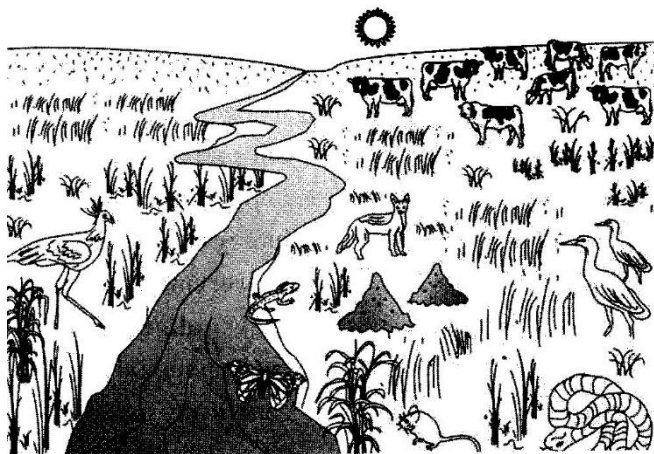
2.6 If the numbers of organism A in the diagram above increased, indicate (using the letters B -E) the animals that might:

- (a) increase in numbers
- (b) decrease in numbers (2)

2.7 Identify ONE organism/ object/ plant/ animal in the diagram above that represents each of the following:

- (a) Producers
- (b) Herbivores
- (c) Carnivores
- (d) Source of energy
- (e) Predator (5)

3. Study the diagram below and answer the questions that follow:



3.1 Identify the TWO main components/factors that form part of the system in the diagram above. (2)

3.2 Name the system that is mainly represented by this diagram. (1)

3.3 "The higher the altitude the lower the temperature".

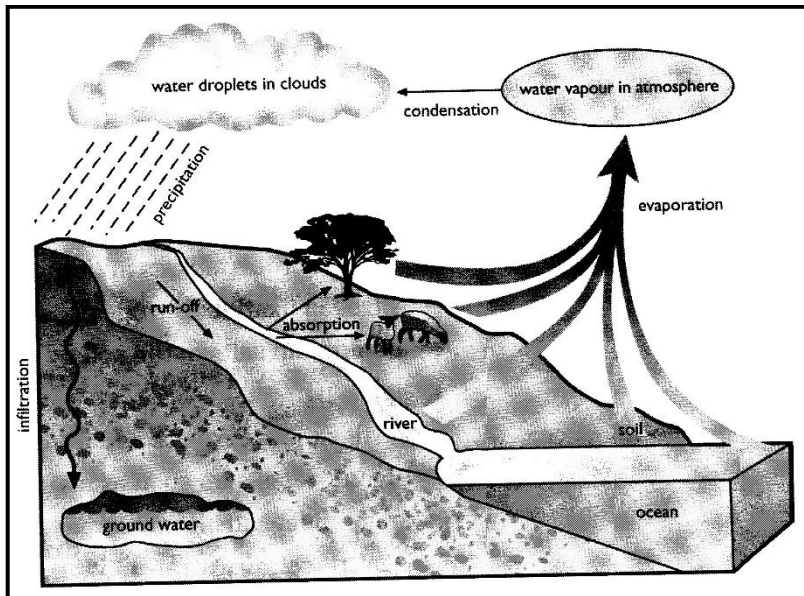
(a) Name the component under which temperature is found. (1)

3.4 Give a reason for your answer in QUESTION 3.3 (a). (2)

3.5 Refer to the diagram above. Mention one example of a/an...

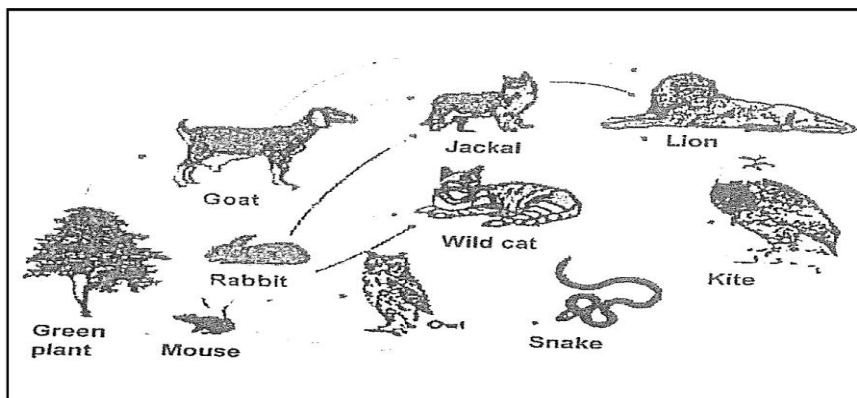
- a) biotic component
- b) abiotic component
- c) primary consumer (3)

4. Study the following diagram and answer the questions that follow:



- 4.1 Give a title for this diagram. (1)
- 4.2 Indicate three processes that are involved in the cycle mentioned in Q 4.1 (3)
- 4.3 Mention the most common form of precipitation. (1)
- 4.4 Mention the form of precipitation which can destroy crops in winter. (1)

5.1 The diagram below indicates the interactions of organisms in an ecosystem. Study the diagram and answer the following questions.

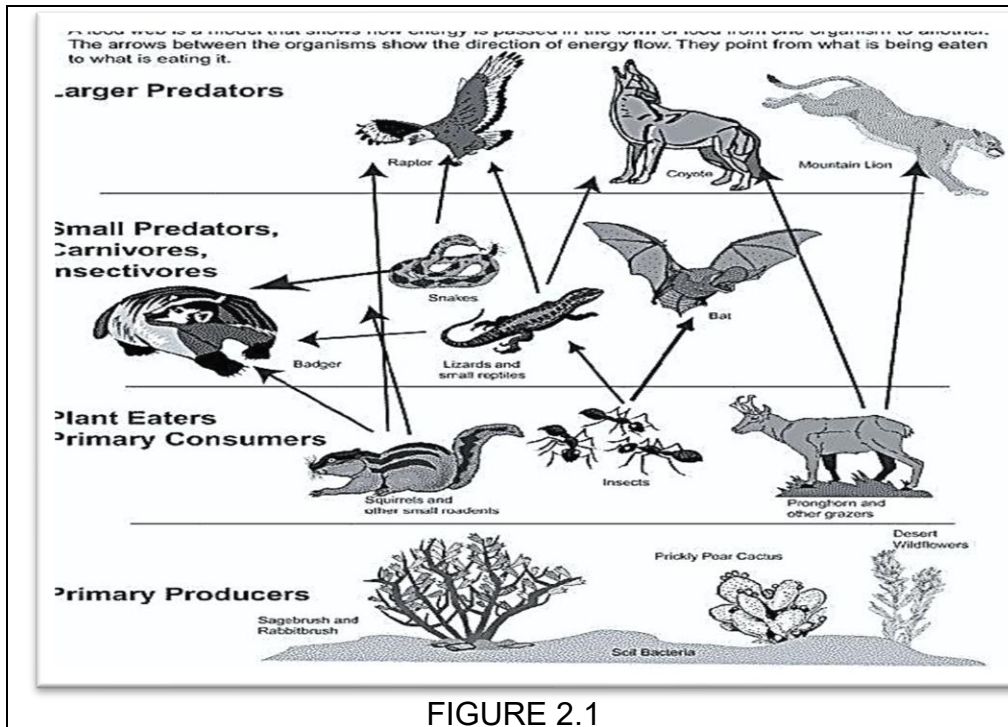


- 5.1 Give the scientific name for this diagram. (2)
- 5.2 Identify ONE example of the following from the diagram:
 - a) Omnivore (1)
 - b) Browser (1)
 - c) Primary consumer (1)
- 5.3 Differentiate between *herbivores* and *carnivores*. (4)
- 5.4 Name TWO biotic factors that can influence an ecosystem (2)

5.5 Give ONE reason why green plants are known as producers (2)

5.6 Name THREE physiographic factors that have an influence on plant and animal life. (3)

6. Study the following illustration and answer the questions that follow



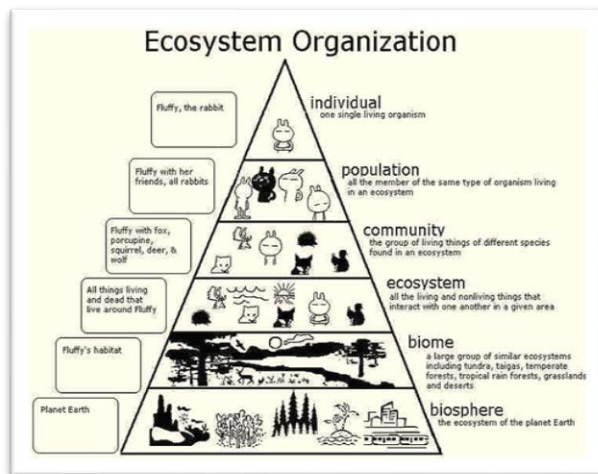
6.1 Describe what an Agro- Ecosystem is (2)

6.2 List FIVE interactions that are found in an ecosystem. (5)

6.3 What organism plays a role in recycling? (1)

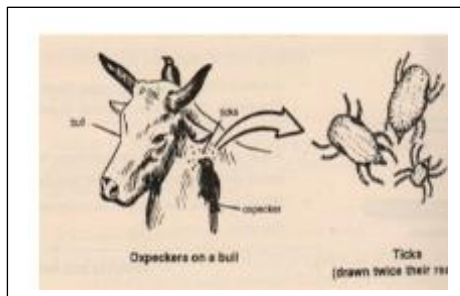
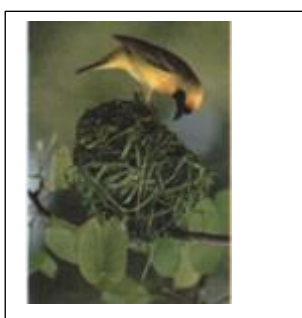
6.4 Which of above FIGURE 2.1 represents the largest biomass in a biomass pyramid? (1)

7.1 Study the Ecosystem Organization and answer the following questions



- 7.1 Define the term Ecology. (2)
- 7.2 What are the components of an ecosystem? (2)
- 7.3 Give TWO examples for each component in 7.2 (4)
- 7.4 Differentiate between a population and a community. (2)
- 7.5 What is Agro- Ecology? (2)
- 7.6 Explain the meaning of the term symbiosis (2)

8.1 The diagram below shows the interaction between organisms in the ecosystem: Identify each type of interaction between organisms labeled A-C (3)



- A: Jackal preying on sheep** **B: Birds nest in tree** **C: Oxpecker on cattle**

8.2 Read the Case Study below which describes the interactions between ants, aphids, plants and ladybirds, and answer the questions that follow:

Interactions between ants, aphids, plants and ladybirds

Aphids are small insects that use piercing and sucking mouth parts to suck fluids from the soft growing tips of plants. The aphids excrete lots of waste in the form of sugary liquid called honeydew. Ants like to feed on the honeydew so much that they farm aphids to get it. The ants carry the aphids from plant to plant and protect them from predators and parasites. Aphids weaken the plants by sucking the fluids from them and they also carry diseases from plant to plant as they feed. Farmers

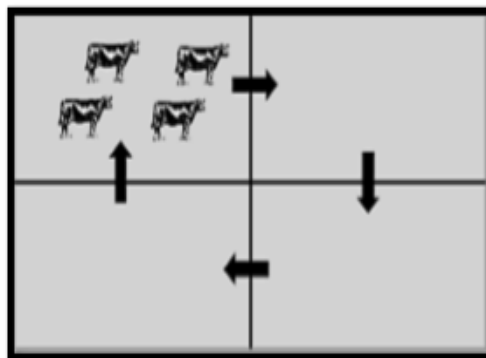
need to control aphids to prevent damage to their crops. Some farmers spray chemicals called pesticides onto their crops to kill the aphids. However, pesticides kill other useful insects, and it can be dangerous if people eat crops that have been sprayed with pesticides. Some farmers prevent aphids from damaging their crops by releasing ladybirds onto their crops. A ladybird is a type of beetle that is a natural predator of aphid



- 8.2.1 Identify the type of symbiotic relationship between ants and aphids in the case study. (2)
- 8.2.2 Briefly explain the benefits each (ants and aphids) get out of the relationship. (2)
- 8.2.3 Explain the type of relationship that the aphids have with the plants. (2)
- 8.2.4 Give the name of chemicals used by the farmers to control aphids on their crops. (1)
- 8.2.5 State whether the methods used by the farmer to control aphids is environmentally safe and give reason. (3)
- 8.2.6 Briefly explain the natural method used by other farmers to control aphids onto their crops (2)

Week 3 and 4: Veld Management, Grazing Ecology and Pasture Science:

9. Study the diagram and answer the questions that follow:



- 9.1 Identify the type of grazing system, indicated above (2)
- 9.2 List THREE advantages of such a grazing system (3)

9.3 Camps are obviously very important in such a grazing system. Briefly explain the principles on which these camps will be made (4)

9.4 The following table presents the amount of fodder that a farmer can expect from his planted pastures for the time period from May to September.

Month	Tons of fodder produced
May	23
June	25
July	28
August	30
September	34

Draw a bar graph presenting the fodder produced for the above-mentioned period. (5)

9.5 Explain what is meant by “planted pastures” (2)

9.6 Indicate ONE type of grass that should be suitable as a “planted pasture” (1)

10.

Veld management deals with the utilization and conservation of the natural veld to ensure maximum animal production without harming the natural plant cover. A veld management practice is a formal programme through which veld management practices are applied. It refers to the number of camps allocated to a group of animals and includes different actions.

10.1 Name THREE natural veld types found in Southern Africa. (3)

10.2 Name any TWO of the different actions involved in a formal veld management programme. (2)

10.3 Define the term Stocking rate. (2)

11. Study the diagram below and answer the questions that follow:

<p>CAMP A May – September: Grazing (October – September: Resting)</p>	<p>CAMP B October – April: Grazing (May – September: Resting)</p>	
<p>CAMP C October – April: Grazing (May – September: Resting)</p>	<p>CAMP D May – September: Grazing (October – April: Resting)</p>	

11.1 Identify the agricultural concept that is illustrated in the diagram above. (1)

11.2 Define the concept identified in QUESTION 11.1 above. (2)

11.3 Suggest TWO reasons, why the concept named in QUESTION 11.2 above is important in agriculture. (4)

11.4 Name the Agricultural practice which is the *opposite* of the concept mentioned in QUESTION 11.2 above. (1)

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

Veld fires destroyed 40 000ha in Mpumalanga
Some 40 000ha of grazing land has been destroyed by veld fires in Mpumalanga in August. Mpumalanga CEO said this was on par with 2011 fire statistics in the province. The biggest fire occurred in Perdekop and in Morgenzon. The CEO said the Perdekop fire allegedly started at the Perdekop Municipality dump. Farmers in the affected area have lost all grazing land and are in dire need of animal feed. The CEO said high transport cost made it difficult to obtain animal feed for fire ravaged areas.

12.1 Identify TWO areas where the biggest fire occurred. (2)

12.2 Natural disasters such as veld fires and poor farming practices can cause veld degradation.
Mention FOUR farming practices that lead to poor pasture condition. (4)

12.3 Identify THREE veld types in South Africa. (3)

12.4 Ecological succession is the sequence of plant communities that develop in an area after it has been disturbed. Give THREE stages of ecological succession. (3)

13.1 You have been appointed by the Department of Agriculture as an extension officer. At a farmer meeting you need to inform the farmers on the principles of veld management. Use the following framework and keywords to explain these principles to the farmers

13.1.1 The different veld types, (brief description of each & season of use)
(Any 3x4) (12)

13.1.2 Selective grazing (2)

13.1.3 Over- grazing (2)

13.1.4 Rotational Grazing (2)

13.1.5 Camps (2)

13.1.6 Stocking rate (2)

13.2 Burning of veld is an important veld management tool. Fire is a natural disturbance that pastures have become used to over the years

13.2.1 Name TWO benefits of burning the veld (4)

- 13.2.2 State FOUR factors that a farmer should consider before burning the veld (4)
14. Draw a table to compare sweet and sour veld under the following headings: **(Palatability; Nutritional Value; Climate)** (6)
- 15.1 Differentiate between Sweetveld and Sourveld (4)
- 15.2 Name the TWO abiotic factors that influence the type of veld found in the different ecological regions of South Africa. (2)
- 15.3 Mention TWO practices leading to poor veld conditions. (2)
16. Read the extract below and answer the questions that follow:

Veld Management Systems

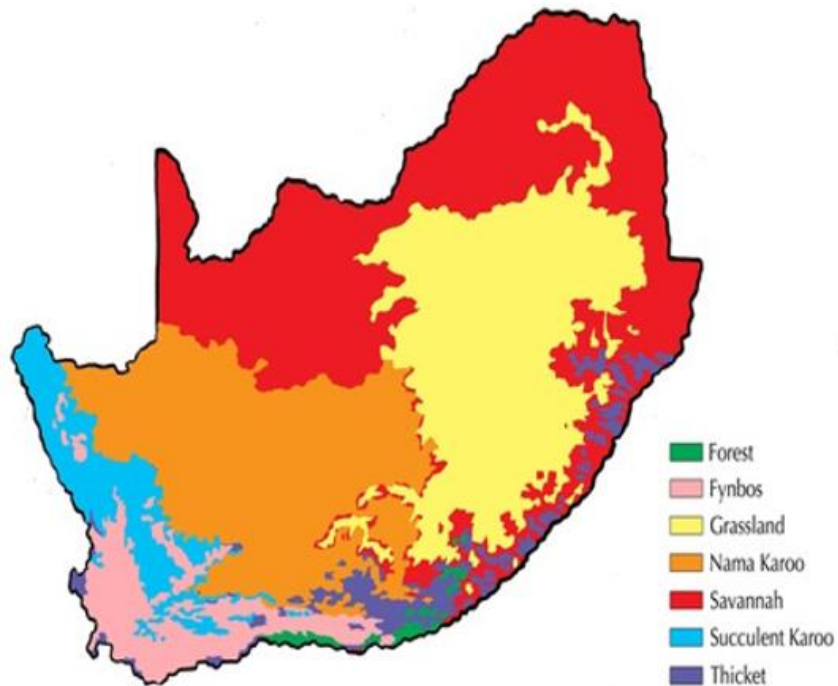
Veld management deals with the utilisation and conservation of the natural veld to ensure maximum animal production without harming the natural plant cover.

- 16.1 Give THREE practices that leads to poor veld or pasture condition (3)
- 16.2 Briefly explain how each of the practices given in 3.3.1 above causes damage to the veld or pasture (3)
- 16.3 Name FOUR different types of biomes found in South Africa. (4)

Week 5: Biomes

17. 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.
- 17.1 Identify ONE threat to the forest biome from the scenario above. (1)
- 17.2 Suggest TWO other threats that are not mentioned in the scenario in QUESTION 17.1 (2)
- 17.3 Give TWO importances of the forest biome in agriculture. (2)
- 17.4 State THREE other biomes of South Africa. (3)

18. Study the FIGURE below showing Biomes of South Africa and answer the questions that follow:



18.1 Define the following terms

a) Climate (2)

b) Biome (2)

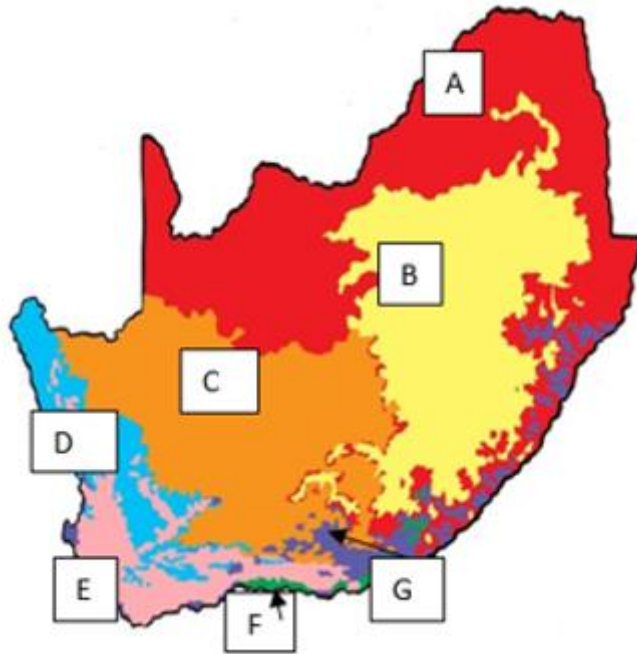
18.2 Study the above figure and identify which biome is being described in each of the following descriptions:

a) Long hot dry summers; wet cool winters” rainfall up to 1200mm per year. (2)

b) This biome often has dramatic thunderstorms; hot summers; cold winters with frost. (2)

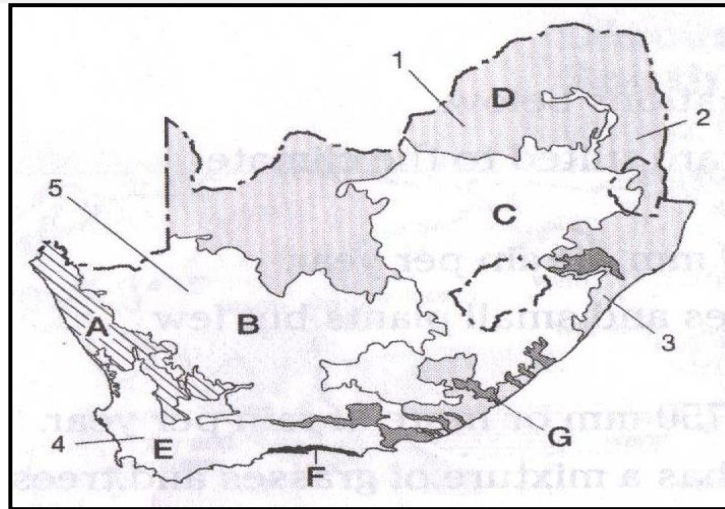
c) Areas with little or no frost; well-shaded river valleys. (2)

19. Study the diagram below and answer the question that follow:



- 19.1 Identify biomes A-G. (7)
- 19.2 Provide a short description of each of these biomes. (Any 7x4) (28)
- 19.3 Write a short paragraph on the influence of climate on the occurrence of biomes. (6)

20. A biome (ecological region) is a large natural area or region with a unique set of factors such as climate, soil and landform. The difference between two biomes can be seen by the dominant plant species. In the grassland biome of South Africa for example grasses dominate. South Africa has seven biomes which covers the whole surface area of the country, and the percentage distribution of these biomes is shown in the table below:



No.	South African Biomes	Area covered (%)
1.	Savanna	49
2.	Nama-Karoo	16
3.	Forest	5
4.	Fynbos	10
5.	Succulent Karoo	9
6.	Grassland	37
7.	Thicket	9

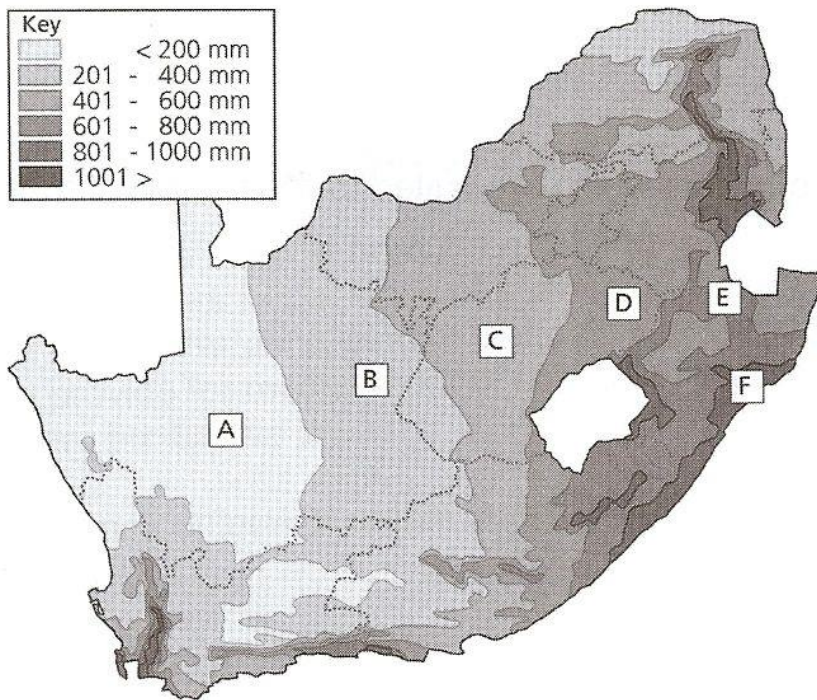
20.1 The map above shows the biomes of South Africa. Analyse the map and identify which biome is being described in each of the following statements:

- (a) Long hot dry summers, wet cool winters and rainfall up to 1200mm per year.
- (b) This biome often has dramatic thunderstorms, hot summers, cold winters with frost.
- (c) Wet summers and dry winters. Frost is very rare.
- (d) Semi- arid region, low rainfall.
- (e) Summer rainfall desert region. Rainfall in the forms of thunderstorms varies between 100-300mm per year. (5)

20.2 Identify the ecological regions indicated by labels **A** and **B** in the map of South Africa above. (2)

20.3 Draw a line graph that represents the information provided in the table above. (5)

21. The map below shows the distribution of rainfall in South Africa. Answer the questions that follow:



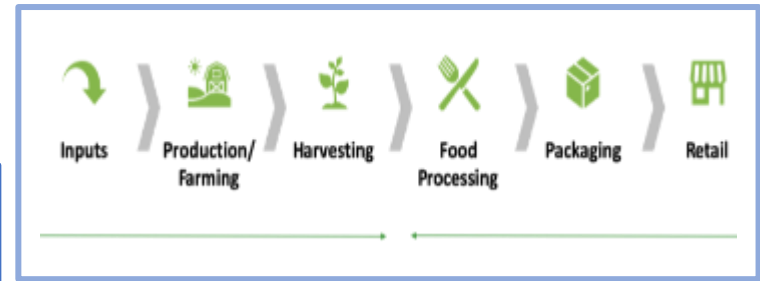
- 21.1 Indicate the rainfall figure that is likely to occur in the regions. labelled A to F. (6)
- 21.2 Identify the type of farming in the following regions: (1)
- (a) region D (1)
 - (b) region B (1)
- 21.3 Give the region where you would find: (1)
- (a) succulent plants. (1)
 - (b) subtropical plants. (1)

Agricultural Economics (Global)

- The history of Agricultural Economics
- Modern challenges and advances of agriculture

Agricultural Economics :(South Africa)

- The Importance
- The economic value of the Agri-industry
- Impact of population dynamics on agriculture
- Impact of secondary and tertiary agricultural development



Indigenous knowledge in South Africa:

- Indigenous (traditional) knowledge systems
- IK used in Agriculture in SA
- Constraints and advantages of indigenous technical knowledge
- Protection and management of IKS in SA



Land Distribution and reform:

- Land ownership in RSA
- Land reform programs in RSA

Agricultural economics

Agricultural legislation:

- The aims of agricultural legislation
- The legal concepts
- Important laws affecting agriculture

Agricultural Organizations:

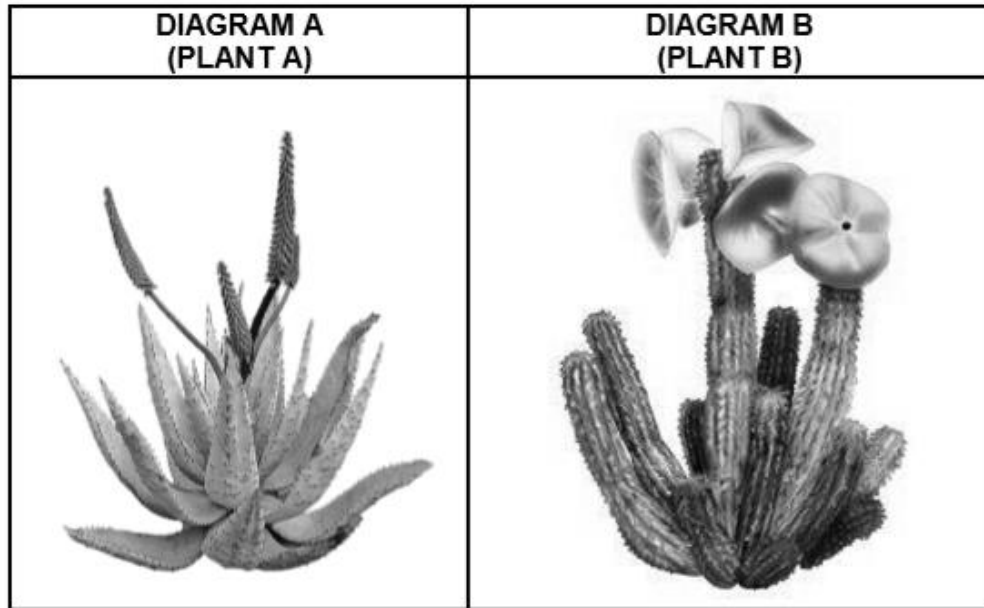
- Levels of Agricultural organization
- Role of agricultural organizations
- Benefits and advantages of agricultural organization

Week 6-8: Introduction to Agricultural Economics (Agri- Industry)

22.1 Briefly explain the contribution that the agricultural industry is making to the GDP of South Africa (5)

22.2 22.2.1 Differentiate, with an example of each, between the primary and the secondary production in the industry (4)

Indigenous knowledge can play a very important role in contributing to the economy. The TWO plants shown below has got certain commercial value and applications:

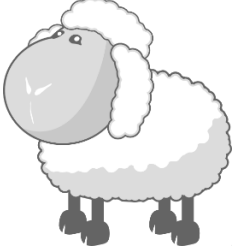









22.2.2 Identify Plant A and Plant B. (2)

22.2.3 Indicate which plant will be suitable for:
a) As a skin remedy against sunburn and allergies
b) As an appetite suppressant (2)

22.2.4 Name the indigenous tribe that the knowledge regarding plant B belongs to. (1)

23.1 Packaging and processing add value to the product and has the potential to generate an additional income from the products from the farm. Fit the pictures in column A with the pictures in column B. Just write the letter next to the number e.g. 23.1.1. F

Column A	Column B
 <p>23.1.1</p>	 <p>A</p>
 <p>23.1.2</p>	 <p>B</p>
 <p>23.1.3</p>	 <p>C</p>
 <p>23.1.4</p>	 <p>D</p>

(4)

23.2 Name TWO other advantages of processing agricultural products (2)

24.

Land reform in South Africa aims to right the wrongs of the past, when the apartheid's government removed black people from their land. Land reform comprises of land restitution, land redistribution and reform of owner's rights. Black families can reclaim their land if they can prove that the land belonged to their family in the past.

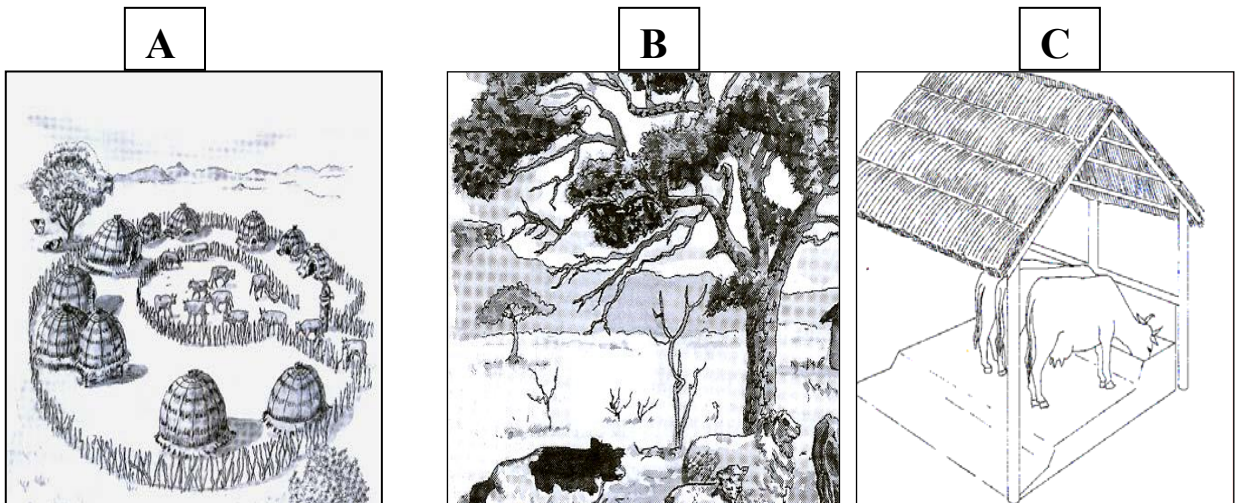
24.1 Differentiate between land restitution and land redistribution (4)

24.2 Indicate ONE function of land redistribution programmes, mentioned in the scenario above (1)

24.3 List THREE models of land ownership in South Africa (3)

25.1 Suggest any THREE provisions by agriculture to emphasize the importance of agriculture as an industry in a country. (3)

25.2 The diagrams below (**A**, **B** and **C**) illustrate different types of shelter used in different systems of production.



25.2.1 From the diagrams marked **A** to **C**, select ONE type of shelter which is the most suitable for the following farming systems:
(a) Subsistence agriculture
(b) Commercial agriculture (2)

25.2.2 Relate diagrams **B** and **C** to the production systems listed below:
(a) Intensive production
(b) Extensive production (2)

26.

Food security is the ability of a country to produce enough food for its entire people. Food security exists when all the people at all times have access to sufficient, safe and nutritious food to meet their dietary needs for a healthy and productive life. A household is food secure when the occupants do not live in hunger or in fear of starvation.

26.1 State THREE factors that influence household food security. (3)

26.2 Suggest ONE threat to food security for each of the following issues:
(a) Water
(b) Land (2)

27.

Food processing involves the changing or transformation of raw materials into commercial products. This results in value adding as well as longer shelf life to many crops because of the various processing methods that are used.

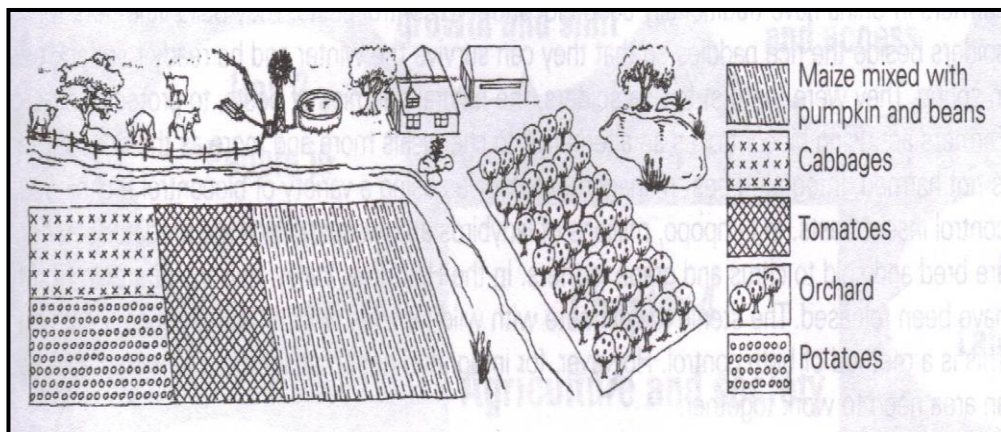


27.1 Identify the process depicted by the picture in the diagram above (1)

27.2 From the scenario above, identify the main aim of processing agricultural products. (1)

27.3 Give TWO advantages of processing agricultural foodstuffs, excluding the main aim mentioned in 27.2 above. (2)

28. The following diagram represents the outlay of a farm.



28.1 Identify the vegetable crop that is planted on this farm. (1)

- 28.2 Identify a permanent crop and a grain crop that is planted on this farm. (2)
- 28.3 The farmer aims to reduce risk on this farm. Describe TWO possible strategies to reduce risk which is visible in the diagram above. (2)
- 29.
- In South Africa, agriculture is an important economic activity. Economics is the system of producing, distribution, setting and consuming goods and services.
- 29.1 Mention THREE levels of agricultural economic activities and give ONE example in each case. (6)
- 29.2 List THREE ways how the production of agricultural goods contributes to the economy of the country. (3)
- 30.1 People have been processing food for many years. Our grandparents used different methods to preserve food. Indicate how they preserved the following:
- 30.1.1 Meat (1)
- 30.1.2 Milk (1)
- 30.1.3 Maize cobs (1)
- 30.2 30.2.1 State the other TWO common methods of preserving food in agriculture. (2)
- 30.2.2 Give ONE advantage of using indigenous farming practices. (1)
31. Briefly describe how growing population numbers impact on food production in South Africa. (2)
32. Mention TWO advantages of veld burning. (4)
33. Indicate TWO reasons why soil is important. (4)
34. Briefly discuss the following ecological farming methods:
- 34.1 Organic Farming
- 34.2 Game farming (4)
35. List FOUR challenges facing land redistribution. (4)

MEMORANDUM

Term 1: Week 1/2 Agro- Ecology

1. Individual✓,Community✓,Population✓, Ecosystem✓ Biome✓Biosphere✓ (6)

2. 2.1

Biotic	Abiotic
Plants✓	Sun✓
Animals✓	Water✓
(Any 2)	Soil✓ (Any 2)

(4)

2.2 Grass ✓ → Mouse✓ → Snake✓ → Secretary Bird✓
(Or any suitable answer) (4)

2.3 a) Grass/ plants✓
b) Cattle/ Mouse✓
c) Snake/ Cattle egret ✓
d) Jackal / Secretary bird ✓ (4)

2.4 Temperature✓, Rainfall ✓ Day length ✓ (3)

Schematic representation

2.5 Food Chain.✓ (1)

2.6 (a) C (Mouse/Rodent) ✓
(b) B (Snake) ✓ (2)

2.7 (a) Sunflower plant ✓
(b) Rat / Rodent /Mouse ✓
(c) Snake / Eagle / Bird ✓
(d) Sun ✓
(e) Snake / Eagle / Bird (5)

3. 3.1. Abiotic✓ and Biotic✓ (2)

3.2 Ecosystem✓ (1)

3.3 Abiotic factor✓ (1)

3.4 Because altitude and temperature are the physiographic factors ✓and are non-living✓ (2)

3.5 a. Plants and animals e.g. birds, snake, and cattle✓
b. Soil and Sun✓
c. Cattle✓ (3)

4. 4.1 Water Cycle✓ (1)

4.2 Evaporation, ✓ condensation, ✓ precipitation, ✓ infiltration, ✓ Run-off✓
and Absorption ✓ (Any 3 x 1) (3)

4.3. Rainfall✓ (1)

	4.4	Frost✓		(1)
5.	5.1	A food web✓✓		(2)
	5.2	Examples From the given food web:		
		• Mouse /Goat✓		(1)
		• Goat / Rabbit✓		(1)
		• Mouse /Rabbit/Goat✓		(1)
	5.3	• Herbivores are plant eating ✓ animals✓		
		• Carnivores are meat eating✓ animals✓		(4)
	5.4	Because they can make their own food using sunlight and other inorganic substances during photosynthesis✓✓		(2)
	5.5	TWO biotic factors Plants✓ Animals ✓		(2)
	5.6	THREE physiographic factors Aspect ✓ Slope✓ Altitude ✓ Latitude ✓	(Any 3)	(3)
6.	6.1	Agro – ecosystem is an ecosystem that consists of agricultural plants and animals✓		(2)
	6.2	☆ Competition✓ ☆ Predation and prey / predator prey✓ ☆ Mutualism✓ ☆ Commensalism✓ ☆ Parasitism✓		(5)
	6.3	Decomposition✓		(1)
	6.4	Primary producers/ plants✓		(1)
7.	7.1	The study of the relationships between living organisms and their environment✓✓		(2)
	7.2	Biotic /Living✓ and Abiotic/Non-living✓		(2)
	7.3	Biotic/Living e.g. producers✓; consumers✓; decomposers✓	(Any 2)	(2)
		Abiotic/Non-living e.g. physiographic✓; climatic✓;edaphic✓	(Any2)	(2)
	7.4	Population: all the individual organisms of the same species that live in a particular area✓		(1)
		Community: All the populations of all species that live in a particular area✓		(1)
	7.5	Agro – ecology: Is the science of applying the concepts of ecology ✓ to the design and management of agricultural or farming systems✓		(2)
	7.6	Symbiosis: An interaction between two✓ organisms that live very closely together✓		(2)

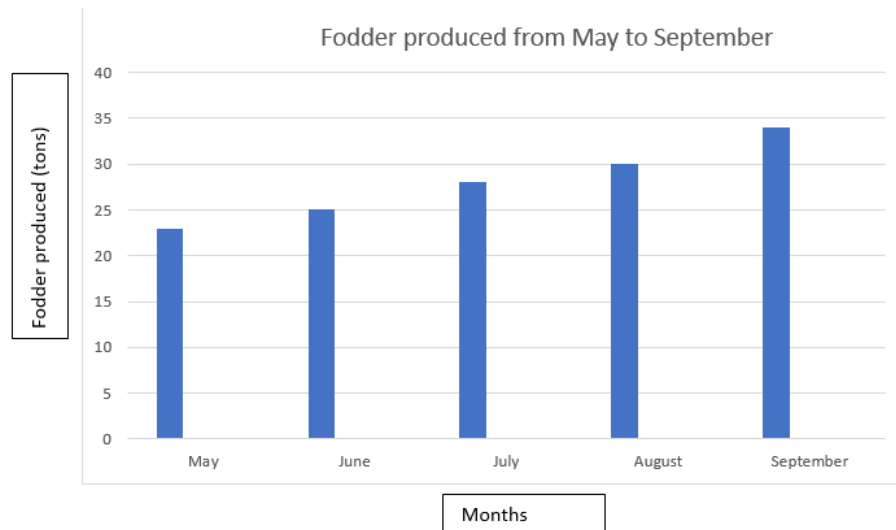
- 8.1 Interaction between organisms
 A. Predation✓
 B. Commensalism✓
 C. Symbiosis✓ (3)
- 8.2 8.2.1 Commensalism✓ (2)
- 8.2.2 Ants like to feed on the honeydew (excreted by aphids) ✓
 Ants carry aphids from plant to plant (protects them against predators) ✓ (2)
- 8.2.3 Aphids weaken the plants by sucking fluids ✓from them/ carry diseases from plant to plant as they feed (Parasites) ✓ (2)
- 8.2.4 Pesticides✓ (1)
- 8.2.5 No. ✓ It also kills beneficial insects ✓which assist the plant during pollination✓ (3)
- 8.2.6 Introduction of ladybirds as natural predators to aphids. ✓✓ (2)

Week 3 and 4: Veld Management, Grazing Ecology and Pasture Science

9. 9.1 Rotational grazing✓✓ (2)
- 9.2
- This system provides grazing all year round, while also allowing some camps to rest and produce seed for the next season. ✓
 - In times of crises the rested camps can be made available as fodder source.✓
 - By resting certain camps parasite control can be achieved.✓ (3)
- 9.3
- Similar veld types need to be fenced together.✓
 - Waterways and vleis needs to be fenced out. ✓
 - The placing of the watering points.✓
 - The size of the herd.✓
 - Number of camps needed.✓ (Any 4) (4)

9.4 **Marking guideline:**

Heading	(1)
X axis	(1)
Y axis	(1)
Plotting	(2)
Total:	(5)



(5)

9.5 Planted pastures is fodder ✓ that a farmer can plant that does not occur naturally in the veld. ✓ These pastures often needs to be irrigated and fertilized to produce optimally ✓ (Any 2) (2)

9.6 Kikuyu/ Star grass/ Eragrotis spp (Any suitable grass) ✓ (1)

10. 10.1

- Sweetveld ✓
- Sourveld ✓
- Mixed veld ✓

(3)

10.2 Stocking rate / Animal ratio / Rotational grazing / Rotational resting / Veld Burning. ✓✓ (Any 2) (2)

10.3 Stocking rate – is the number of animal units that can be grazed on a given area over a period of time. ✓✓ (2)

11. 11.1 Rotational grazing ✓ (1)

11.2 Rotational grazing – moving of livestock/ animals ✓ from one camp to another ✓ (2)

11.3

- Pest and diseases are reduced ✓✓
- Condition of the grass can improve from year to year ✓✓
- Grass can be kept for grazing in dry season or when there is drought ✓✓
- Grass is not grazed at the same time. ✓✓ (Any 2 x 2) (4)

11.4 Continuous grazing ✓ (1)

12. 12.1 **TWO areas with the biggest veld fires.**

- Perdekop ✓
- Morgenzon ✓

(2)

12.2 **FOUR farming practices that can cause land destructions**

- Overgrazing ✓
- Continuous grazing ✓

- Selective grazing✓
- Wrong stock ratio✓ (2)

- 12.3
- Sour veld✓
 - Sweet veld✓
 - Mixed veld✓ (3)

12.4 **Ecological succession**

There are **five** main elements to **ecological succession: primary succession**, ✓ **secondary succession**, ✓ pioneer✓ and niche species✓, climax communities and sub-climax communities✓ (5)

Question 13.1

13.1.1 Three veld types

Veld type	Description	Season of use
Sweet veld (1)	Occurs in low rainfall areas✓ Do not translocate nutrients to their leave basis in winter Stays green or semi- green✓ (Any 2)	Stay nutritious all year✓ (1)
Sour veld (1)	Store nutrients at leave basis during winter✓ Turns brown and dead in winter ✓ (Any 2)	Only nutritious during growing season, thus summer✓ (1)
Mixed veld (1)	Consist of sweet mixed veld and sour mixed veld (2)	Sweet mixed provides grazing 9-11 months of the year Sour mixed veld provides grazing 6- 8 months of the year (1)

(12)

- 13.1.2 **Selective grazing**- takes place when the animals select only the palatable grasses✓ in a camp. This might lead to the formation of bare patches which can then be taken over by less palatable species. ✓ ✓ (2)
- 13.1.3 **Over grazing**-is often the result of overstocking as well as continuous grazing and is very detrimental to veld condition and should be avoided at all costs✓ ✓ (2)
- 13.1.4 **Rotational grazing** – This includes the use of dividing the veld into camps. More efficient utilization of the herbage is possible with less selective grazing. Animals are moved before overgrazing takes place✓✓ (2)
- 13.1.5 **The division of veld** into units according to the veld type - certain vulnerable part of the veld can be fenced out for protection. ✓ **Camps** aids in veld management. ✓ (2)
- 13.1.6 **Stocking rate** – The land- animal ratio and should be adjusted from season to season to prevent overstocking and over grazing of camps ✓✓ (2)

- 13.2.1
- It removes dead material from plants and undesirable that reduces the growth of nutritious leaves✓✓
 - Prevents bush encroachment in veld pastures✓✓
- (4)

- 13.2.2
- The type of fire✓
 - The intensity of the fire✓
 - The season of burning✓
 - The frequency of burning✓
- (4)

14.

CRITERIA	SWEET-VELD	SOUR-VELD
Palatability	More palatable✓	Less palatable✓
Nutritional Value	Good all year-round✓	Only good in the growing season. Poor in winter✓
Climate	Higher temperatures✓	Low temperatures✓

(6)

- 15.1 15.1.1 Difference between sourveld and sweetveld: (do not have to be in & table form)

15.1.2

Sweet veld	Sour veld
Veld keeps nutritional value throughout the year✓	Nutritional value decrease in winter✓
Veld become white in winter✓	Veld become brown, yellow in winter ✓
Easily overgrazed✓	Can readily withstand overgrazing✓
Carry capacity is low✓	Carry capacity is high✓

(Any 2) (Any 2) (4)

- 15.2
- Rainfall✓
 - Temperature✓
 - Topography✓
 - Wind✓
- (Any2) (2)

- 15.3
- Overgrazing✓
 - Slash and burn✓
 - Selective grazing✓
- (Any 2) (2)

- 16 16.1 Practices leading to poor veld or pasture condition.
- Overgrazing✓
 - Selective grazing✓
 - Continuous grazing✓
- (3)

16.2 Impact of each practice to result in poor or damaged veld or pasture condition

Poor veld/ pasture condition	Impact/ damage caused
Overgrazing	<ul style="list-style-type: none"> Plants are continuously grazed until the nutritional reserves are depleted and die✓ Palatable plants are grazed first to leave only extreme unpalatable plants✓ Condition of the veld deteriorates, and areas become barren/ soil erosion follows✓
Selective grazing	<ul style="list-style-type: none"> Overgrazing of palatable plants results in the increase of less – palatable plants✓
Continuous grazing	<ul style="list-style-type: none"> No provision for veld rest and no build-up of material that can serve as food reserve Condition of the vegetation deteriorates due to selective grazing/ result in sparse coverage ✓

(Any one from each of the systems) (3)

16.3 Biomes of South Africa

- Grassland Biome✓
- Savannah Biome✓
- Forest Biome✓
- Thicket Biome✓
- Nama Karoo Biome✓
- Succulent Karoo Biome✓
- Fynbos Biome✓

(Any 4) (4)

Week 5: Biomes

17.

17.1 Threat to the forest biome✓ (1)

17.2 **TWO other threats that are not mentioned in the scenario**

- Growing human needs in rural areas (trees removed for wood, building, medicine) ✓
- Overgrazing ✓
- Veld burning✓
- Mining along the coast ✓
- Road building, power lines, dams, resorts. ✓ (Any 2 x 1) (2)

17.3 **TWO reasons for the importance of the forest biome in agriculture**

- Timber production ✓
- Plantation of exotic trees e.g., pine and eucalyptus ✓
- Supports the tropical and sub-tropical fruit industry ✓ (Any 2 x 1) (2)

- 17.4 **THREE other biomes of South Africa**
- Grassland ✓
 - Fynbos ✓
 - Savannah ✓
 - Nama-Karoo ✓
 - Succulent Karoo ✓
 - Thicket ✓
- (Any 3 x 1) (3)
- 18.1 **Climate:** The long - term pattern of weather conditions that occur in an area ✓✓ (2)
- Biome:** An ecological community that covers a large area and is characterised by a particular type of plant ✓✓ (2)
- 18.2 (a) Fynbos ✓ (2)
 (b) Nama - Karoo ✓ (2)
 (c) Forest ✓ (2)
- 19.1 A – Savannah Biome ✓ E – Fynbos Biome ✓
 B – Grassland Biome ✓ F – Forest Biome ✓
 C – Nama Karoo Biome ✓ G – Thicket Biome ✓
 D – Succulent Karoo Biome ✓ (7)
- 19.2 **Savannah Biome** – A mixture of grasses and scattered trees ✓ Hot to very hot summers, ✓ with a moderate rainfall (650 mm - 1000 mm/year). ✓ Mild winters ✓ with little or no frost ✓ (4)
- Grassland Biome** – Mainly grasses with smaller, softer type trees ✓ Warm summers ✓ with moderate rainfall ✓ (400-800 mm/year.) Cold winters with frost ✓ (4)
- Nama Karoo Biome** – Short, hardy grasses and shrubs ✓
 Hot summers ✓ with low (100-400 mm/ year) rainfall year-round ✓ Cold winters with frost ✓ (4)
- Succulent Karoo Biome** – Mostly succulent plants that can store water ✓ Hot, dry summers ✓ with very low rainfall (20-290 mm/year ✓). Moderate winters with no frost ✓ (4)
- Fynbos Biome** – Plants are unique, e.g. heathers, reeds, proteas and shrubs with leathery leaves ✓. Hot, dry summers ✓ High rainfall in winter (400-1200 mm/year.) ✓ Sometimes snows in winter ✓ (4)
- Forrest Biome** – Plants mostly consist of tall trees with smaller shrubs underneath and little or no grasses ✓. Warm summers ✓ and moderate winters with no frost ✓. High rainfall (800-1000 mm)/year, year-round ✓ (4)
- Thicket Biome** – Plants are small trees and shrubs that grow closely together with little or no grasses ✓. Hot summers ✓ with moderate summer rainfall (400-800 mm/year). ✓ Mild winters with no frost ✓ (4)
- 19.3 **Climate** is the most determining factor regarding the formation of biomes. ✓

The two most important climatical factors are rainfall[√] and temperature. [√]
 Rainfall is the season[√] that it rains in and the amount of rainfall per year is the determining factor[√]. Temperature varies according to the slope and aspect[√] of the land and also the altitude[√] (Any 6)

(6)

20.1 **Ecological regions (Biomes) of South Africa**

- a) Fynbos Biome[√]
- b) Grassland[√]
- c) Savannah[√]
- d) Thicket[√]
- e) Nama Karoo[√]

(5)

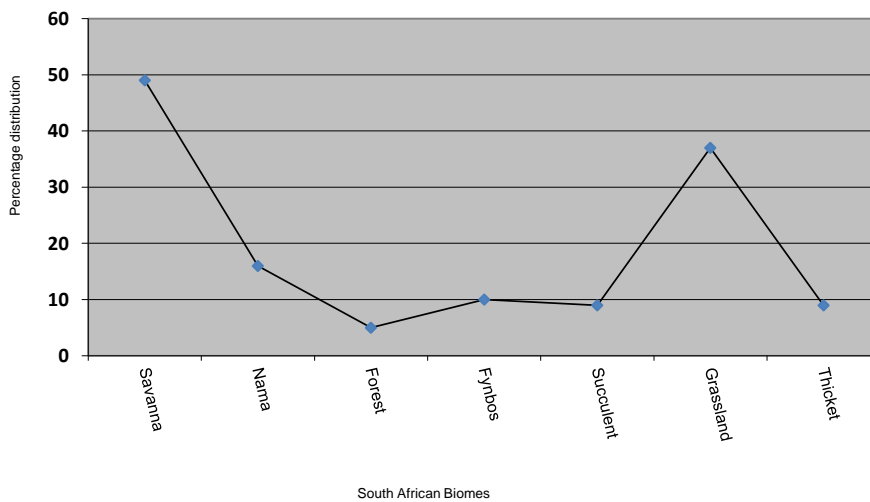
20.2 A = Succulent Karoo[√]

B = Nama Karoo[√]

(2)

20.3 **Graph:**

South African Biomes' distribution as a percentage



Criteria	YES	NO
Correct type of graph	1	0
Suitable caption / heading / title	1	0
Correct labeling of axes	1	0
Correct scale on both axes	1	0
Accurate shape of the bars	1	0

(5)

21.1

- A: <200 mm [√]
- B: 201 – 400 mm [√]
- C: 401 – 600 mm [√]
- D: 610 – 800 mm [√]

E: 801 – 1 000 mm ✓
F: >1 000 mm ✓ (6)

21.2 a) Cattle farming ✓
b) Merino farming ✓ (2)

21.3 a) A ✓
b) F ✓ (2)

Week 6-8: Introduction to Agricultural Economics/ Agri- Industry

22.1 The Agricultural Industry contributes to the GDP by providing the following:
• Job opportunities✓ – Income to families- which in turn will drive spending, which will support other economic enterprises✓
• Produce to be sold and or exported✓ – Income for the country✓
• Secondary and Tertiary enterprises are being supported✓ since it provides resources that drive primary production✓ (Any 5) (5)

22.2 22.2.1 Primary production – raw products✓ such as maize, wheat, grapes✓
Secondary production – when the raw products are being utilized✓ to produce something else e.g. grapes to wine✓ (4)

22.2.2 Plant A - Aloe✓ Plant B - Hoodia✓ (2)

22.2.3 a) Plant A✓
b) Plant B✓ (2)

22.2.4 The Koi- San people✓ (1)

QUESTION 23:

23.1 23.1.1 B✓
23.1.2 D✓
23.1.3 C✓
23.1.4 A✓ (4)

23.2 Processing and packaging make products “out of season “available✓
It also helps securing additional job opportunities ✓ (2)

24.1				
	24.1.	Differences between land redistribution and land restitution		
		Land redistribution		
		• Giving previously disadvantaged ✓ people access to land ✓		
		Land restitution		
		• Returning land ✓ to people who were forcibly removed ✓		(4)
	24.2.	Function of land reform programmes		
		• To restore land rights ✓		(1)
	24.3.	Models of land ownership in South Africa		
		• State/government landownership ✓		
		• Communal landownership ✓		(3)
		• Freehold land/private land ownership ✓		
25.1		Importance of Agric. industry:		
	(a)	Provide employment ✓		
	(b)	Provide economic stability ✓		
	(c)	Provide primary products/raw material for industry ✓		
	(d)	Provide food ✓	(Any 3)	(3)
25.2		Different types of shelter:		
	25.2.1	(a) A ✓		
		(b) B or C ✓		(2)
	25.2.2	(a) C ✓		
		(b) B ✓		(2)
26.		Food Security:		
	26.1	Factors that influence household food security:		
		• The number of income earners versus the number of dependents ✓		
		• Job security ✓		
		• Household income levels ✓		
		• Infrastructure and service delivery ✓	(Any 2)	(2)
	26.2	(a) Threats to food security with regard to Water:		
		• S.A. is a water scarce country ✓		
		• Most arable land is under irrigation ✓		
		• There are many threats to global water supplies (e.g. pollution) ✓		
		• Poor sanitation & lack of access to drinking water causes diseases ✓	(Any 1)	(1)
		(b) Threats to food security with regard to land:		
		• Loss of agricultural land to residential purpose ✓		
		• Development of industries on agricultural land ✓		
		• Soil degradation / Soil Erosion / Soil Compaction ✓		
		• Deforestation ✓		
		• Climate change ✓		

- Drought and harsh weather events ✓
- Soil pollution by industries and farmers ✓ (Any 1) (1)

27. **Food processing:**

27.1 Processing / Value Adding ✓ (1)

27.2 For value adding ✓ and longer shelf life ✓ to many agricultural products. (1)

27.3 **Advantages of processed foodstuffs:**

- Makes food safer to eat ✓
- Makes it easy to market and distribute ✓
- Increases seasonal availability ✓
- Makes transportation of delicate perishable foods possible ✓
- Reduces the incidents of food-borne diseases/ Treated to prevent the growth of bacteria and other micro-organisms ✓
- Makes many foodstuffs easier and more convenient than unprocessed food ✓
- Often involves the addition of nutrients such as vitamins ✓ (Any 2) (2)

28. **Outlay of a farm:**

28.1

- Tomatoes ✓
- Potatoes ✓
- Pumpkins ✓
- Beans ✓
- Cabbages ✓ (Any 1) (1)

28.2

- Permanent crop: Orchard / fruit crop ✓
- Grain crop: Maize ✓ (2)

28.3

- Different crops are planted / not all risk in one crop / product ✓
- Water is stored for irrigation / dams of water ✓
- A river flows through the farm / lots of water available ✓
- Animals are kept on this farm / diversification ✓ (Any 2) (2)

29. 29.1
- Primary agriculture ✓ e.g. Growing crops/ rearing livestock ✓ (Any correct example) (2)
 - Secondary agriculture ✓ e.g. producing sugar from sugar cane/ ✓ producing flour from wheat ✓ (Any correct example) (2)
 - Tertiary agriculture ✓ e.g. processing secondary products – making syrup from sugar/ bread from flour. ✓ (Any correct example) (2)
- 29.2
- Provide food and useful material such as cotton and wood ✓
 - To Provide jobs ✓
 - To earn foreign exchange ✓ (3)

- 30.1 30.1.1 Biltong /drying✓ (1)
- 30.2.2 Sour milk✓ (1)
- 30.3.3 Drying✓ (1)
- 30.2 30.2.1
- Freezing✓
 - Canning✓
 - Smoking✓
 - Salting✓
- (Any 2x1) (2)
- 30.2.2
- Are environmentally friendly✓
 - Are non – intensive✓
 - Are chemical free✓
 - Are adapted to suit local environmental conditions✓
 - Offer low cost solutions✓
- (Any 1) (1)
- 31.
- Loss of farming expertise in rural areas✓
 - A large increase in the demand for food in urban areas✓
 - More emphasis is on large scale production✓
 - A decrease in small- scale and subsistence farming in rural areas✓
 - An increase in the production of food sold through large supermarket chain with reduction in street markets and local markets✓
 - A demand for a wide range of food and seasonal foods to be available✓
- (2)
(Any 2 x 1)
- 32.
- Rid veld of accumulated organic matter✓✓
 - Aids in controlling invasion of undesirable plant species✓✓
 - Certain species require fire to germinate✓✓
 - Prevent species from becoming moribund✓✓
 - Destroys parasites ✓✓
- (Any 2 x 2) (4)
- 33.
- Medium for plant growth✓✓
 - Anchor the plant✓✓
 - Supplies plants with nutrients✓✓
 - Provides water for plants ✓✓
- (Any 2x2) (4)
34. 34.1 **Organic farming** – an approach to farming based on biological methods✓ that avoid the use of synthetic crop or livestock production inputs. ✓
- 34.2 **Game farming** – is a grazing system that uses large camps ✓ for variety of game species. ✓ (4)
- 35.
- Lack of funds and access to credit✓
 - Lack of infrastructure✓
 - Lack of expertise and training✓
 - Lack of access to markets and marketing expertise✓
- (4)

The End