



Province of the
EASTERN CAPE
EDUCATION

**NATIONAL
SENIOR CERTIFICATE**

GRADE 10

NOVEMBER 2019



AGRICULTURAL SCIENCES P1

MARKS: 150

TIME: 2½ hours



* X A G S E 1 *

This question paper consists of 17 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 number (1.1.1–1.1.10) in the ANSWER BOOK, for example 1.1.11 A.

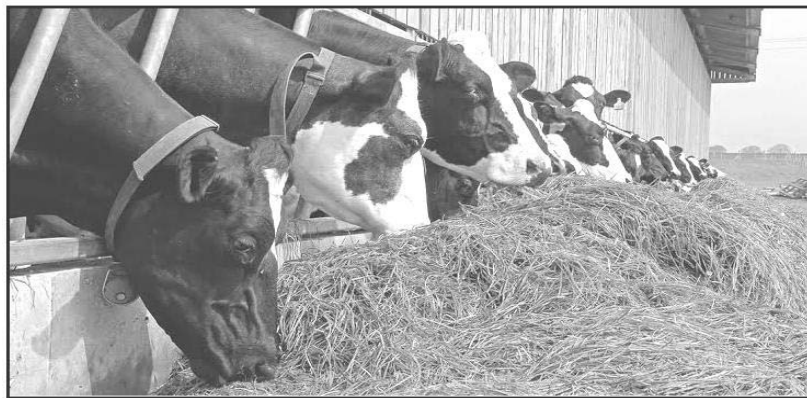
1.1.1 A group of individual organisms that is similar in appearance, behaviour and genetic make-up.

- A Ecosystem
- B Community
- C Population
- D Species

1.1.2 Which of the following threats is INCORRECT with regard to the fynbos biome?

- A Alien plants
- B Overgrazing
- C Climate change
- D Agriculture

1.1.3 The picture below is an example of ... grazing.

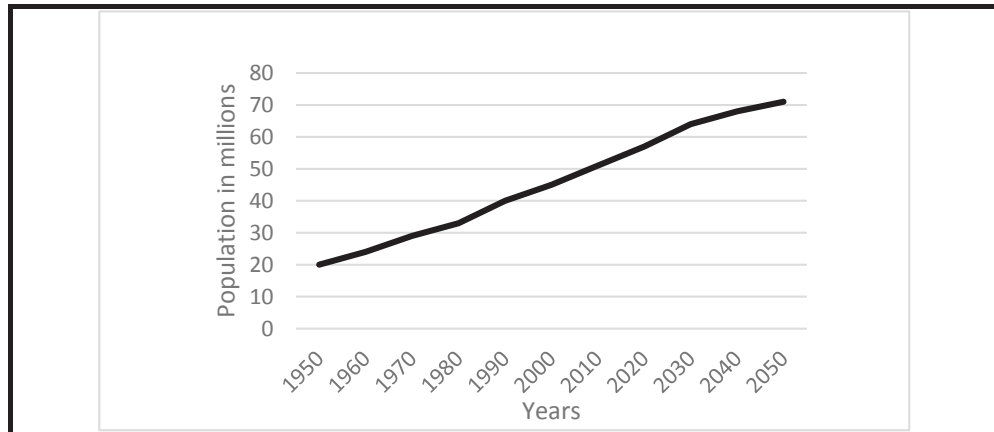


- A selective
- B zero
- C rotational
- D non-selective

1.1.4 The production of maize in the Western Cape is 96 tons, in the Eastern Cape 92 tons and in Gauteng 84 tons. The production percentage of the Eastern Cape province will be ...

- A 45,7%.
- B 27,1%.
- C 33,8%.
- D 35,6%.

- 1.1.5 The trend shown by the population and number of years on the graph below, proves that the ...



- A population increases with years.
B population decreases with years.
C population increases in years.
D number of years is increasing.
- 1.1.6 One of the following statements about indigenous knowledge is CORRECT:
- A Knowledge of the present
B Stored in books
C Learnt by experience
D Economic sustainability
- 1.1.7 The following statements are TRUE about the domestication of animals:
- (i) Most animals were domesticated for their products
(ii) Few animals were domesticated to be pets
(iii) Some animals were domesticated for transport and work
(iv) Many animals were domesticated for home protection
- Choose the CORRECT combination below:
- A (i), (ii) and (iv)
B (i), (iii) and (iv)
C (ii), (iii) and (iv)
D (i), (ii) and (iii)

1.1.8 These animals are known as grazers and are monogastric:

- (i) Horses
- (ii) Goats
- (iii) Donkeys
- (iv) Cattle

Choose the CORRECT combination below:

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

1.1.9 The picture below shows a chicken production system known as the ...



- A deep litter system.
- B battery cage system.
- C back yard system.
- D free range system.

1.1.10 One of the animals listed below, does not belong to the game animals known as The Big Five:

- A Lion
- B Elephant
- C Rhino
- D Giraffe

(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:	Producers	Organisms that obtain food by feeding from other organisms
	B:	Consumers	
1.2.2	A	Sweetveld	Found in areas where rainfall is high
	B:	Sour veld	
1.2.3	A:	State land	Land is owned by a small village
	B:	Leasehold	
1.2.4	A:	Commodity organisations	Local and provincial agricultural organisations
	B:	Agricultural Cooperatives	
1.2.5	A:	Drakensberger	It was created by cross breeding the Afrikaner with the Holstein
	B:	Nguni	

(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 science of applying the concepts of ecology to the design and management of agricultural or farming systems

1.3.2 Liquid water from the surface of water bodies, soil, animals and plants changes into a gas

1.3.3 A measure of how available food is, as well as a person's access to food

1.3.4 A change made to an Act

1.3.5 An incidental or secondary product made in the manufacture or synthesis of something else

(5 x 2) (10)

1.4 Change the UNDERLINED WORD(S) in each of the following statements to make them TRUE. Write only the correct word(s) next to the question number (1.4.1–1.4.5) in the ANSWER BOOK.

1.4.1 Natural pastures have been planted by the farmer for specific livestock production.

1.4.2 The aim of the Marketing of Agricultural Products Act is to prevent diseases in livestock animals and meat.

1.4.3 Mutton breeds are used in wool and meat production systems that combine fine wool production with higher fertility and slaughter lamb production.

1.4.4 Large-bodied horses with thick skins that are used as draught for heavy loads, are called hot-blooded horses.

1.4.5 Impala are small omnivore animals and are proficient scavengers.

(5 x 1) (5)

TOTAL SECTION A: 45



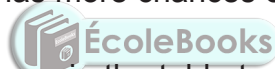
SECTION B**QUESTION 2: AGRO-ECOLOGY**

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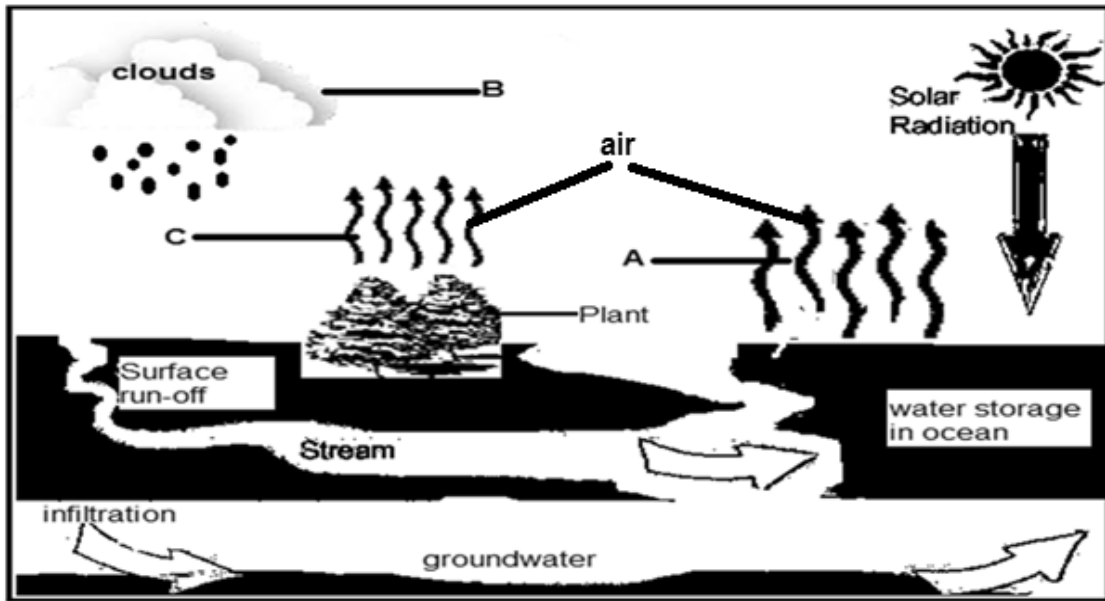
- 2.1 The table below shows different organisms living in an ecosystem. Analyse the table and answer the questions that follow.

ORGANISMS	NUMBER OF ORGANISM	CHANCES OF SURVIVAL (%)
Hyenas	76	84
Lions	42	95
Springboks	150	60
Thatch grass	Millions	99

- 2.1.1 Refer to the organisms in the table above and identify the primary consumer. (1)
- 2.1.2 Give a reason for your answer in QUESTION 2.1.1. (1)
- 2.1.3 Indicate the type of competition that will take place between the lion and the hyena during hunting. Justify your answer. (2)
- 2.1.4 Explain why the lion has more chances of survival in this ecosystem. (2)
- 2.1.5 Use the list of organisms in the table to draw a food chain to show the FOUR trophic levels of energy flow in the ecosystem. (4)



2.2 The diagram below shows a very important nutrient cycle. Study the diagram and answer the questions based on it.

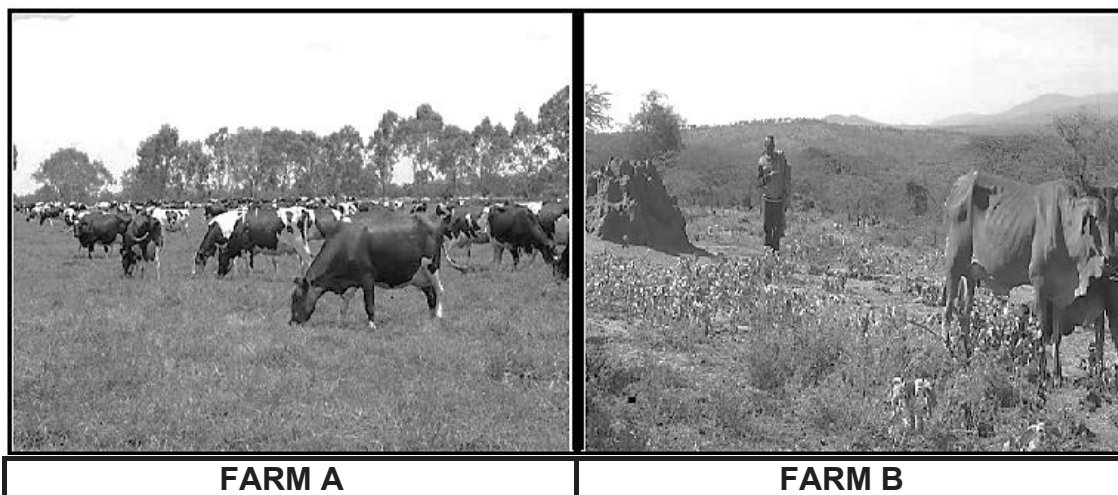


2.2.1 Identify the nutrient cycle depicted in the diagram above. (1)

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

2.2.3 Suggest the component of the ecosystem to which water belongs. (1)

2.3 The two pictures below, which show pastures of different farms, were taken by Grade 10 learners. Analyse the pictures and answer the questions that follow.



2.3.1 Identify the pastoral condition of farm **A** and **B**. (2)

2.2.2 Suggest TWO farming practices that led to the pastoral condition of farm **B**. (2)

- 2.3.3 State the veld management practice applied to farm **A** in the following situations:
- (a) Pasture is divided into small camps and animals are moved from one camp to another during the year (1)
 - (b) The farmer allows a certain number of animals in one camp (1)
 - (c) Each camp carries 50 concentrate grazers and 100 bulk grazers (1)
- 2.3.4 Provide TWO advantages of communal farming. (2)
- 2.3.5 Name TWO reasons why pasture management is important. (2)

2.4 A biome is a large natural area with a unique set of factors such as climate, soil and landform. Such factors determine the kind of plants (trees, ferns, grasses) that grow there and animals (elephants, antelopes) that live in that biome. One of the South African biomes is dominated by tall trees and another one is dominated by different types of grasses.

- 2.4.1 Refer to the scenario above and identify ONE example of fauna found in South African biomes. (1)
- 2.4.2 Suggest the names of South African biomes characterised by the underlined phrases. (2)
- 2.4.3 Give any other TWO South African biomes not mentioned in the scenario. (2)
- 2.4.4 Supply ONE function of the Savannah Biome in agriculture. (1)

2.5 Changes in the climate mean that farmers need to choose farming practices that will be successful under the increased temperatures, changes in rainfall and reduced soil fertility.

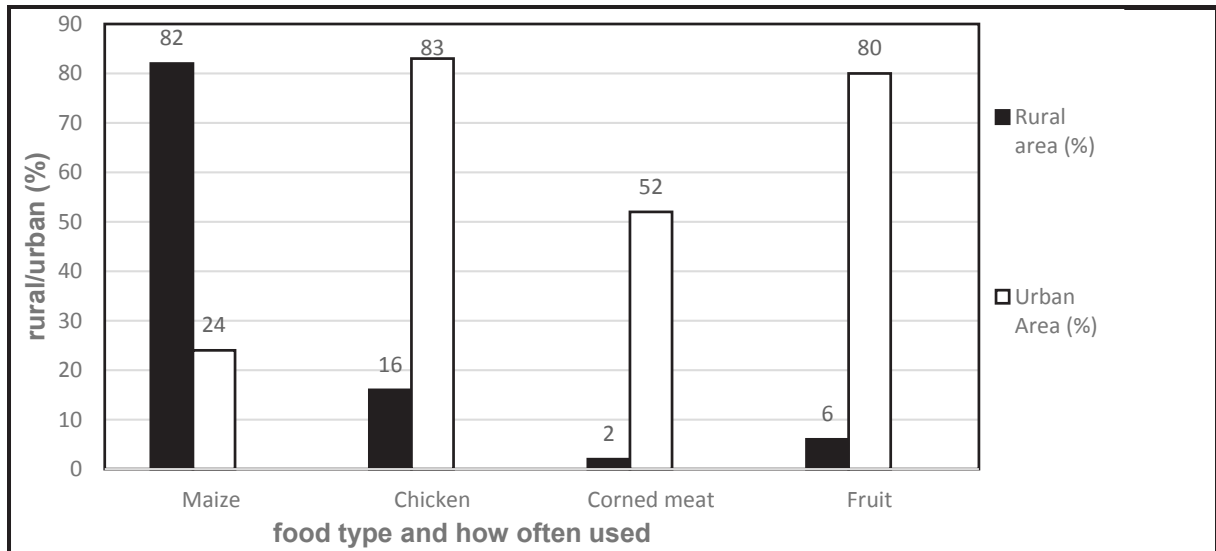
- 2.5.1 Name ONE cause of climate change. (1)
- 2.5.2 Suggest any impact of climate change on agriculture. (1)
- 2.5.3 Indicate ONE way in which farmers in South Africa can adapt to climate change. (1)

[35]

QUESTION 3: AGRI-INDUSTRY

Start this question on a NEW page.

- 3.1 The graph below shows the information about patterns of food use. Study the graph and answer the questions that follow.



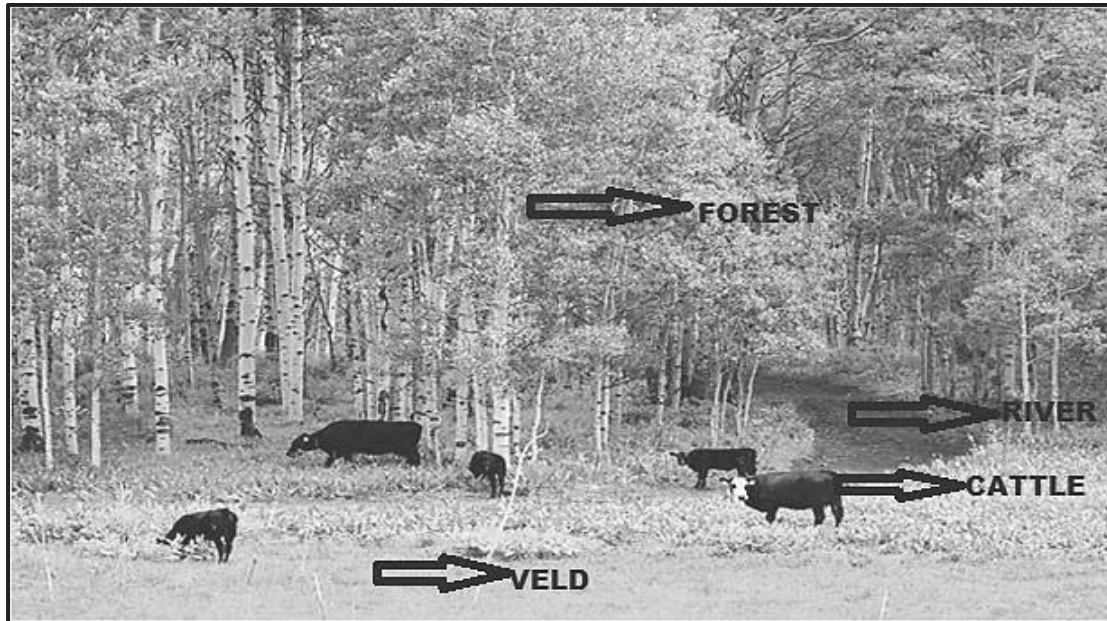
- 3.1.1 Refer to the graph above and identify the food that is mostly used in rural areas. (1)
- 3.1.2 Give a reason for the answer to QUESTION 3.1.1. (1)
- 3.1.3 Food products in agriculture are classified into three groups. Suggest the class to which corned meat and fruit belong. (2)
- 3.1.4 Calculate the difference in maize use between rural and urban areas. Show all your calculations. (3)
- 3.1.5 Translate the data from the graph into a **table**. (5)

3.2 The picture below indicates some very important knowledge in the history of agriculture. Study the picture and answer the questions based on it.



- 3.2.1 Suggest whether the knowledge in the picture is indigenous or scientific. (1)
- 3.2.2 Give a reason to support your answer in QUESTION 3.2.1. (1)
- 3.2.3 Indicate how indigenous knowledge is used in agriculture in the following situations:
- (a) The farmer grows two or more different crops next to each other (1)
 - (b) Crops are changed regularly on the same piece of land (1)
- 3.2.4 Deduce any TWO constraints of using indigenous knowledge in agriculture. (2)

- 3.3 The picture below shows the natural agricultural resources that need to be protected by South African laws. Analyse the picture and answer the questions that follow.



- 3.3.1 Identify the resource from the picture which is protected by the following laws:
- (a) Animal Disease Act (1)
 - (b) Conservation of Agricultural Resources Act (1)
 - (c) National Water Act (1)
 - (d) National Veld and Forest Act (1)
- 3.3.2 Name TWO aims of agricultural legislation. (2)
- 3.4 Population growth and urbanisation in South Africa has a big impact on agricultural production.
- 3.4.1 Define the term *urbanisation*. (2)
- 3.4.2 Outline TWO negative effects of population growth on the agricultural sector. (2)

3.5 Land ownership means that the land belongs to whoever owns it, while land tenure means that a person may have access to the land and can use it.

3.5.1 Deduce the type of land ownership or type of land tenure the following statements:

- (a) The farmer rents a piece of land from the owner (1)
- (b) The farmer from another country owns a land to grow livestock (1)
- (c) A fenced natural forest and the people from community are not allowed to fetch wood from the forest (1)
- (d) Farm workers are provided with a piece of land for settlement (1)

3.5.2 Explain the difference between *land redistribution* and *land tenure reform*. (2)

3.5.3 Name ONE role of agricultural organisations. (1)

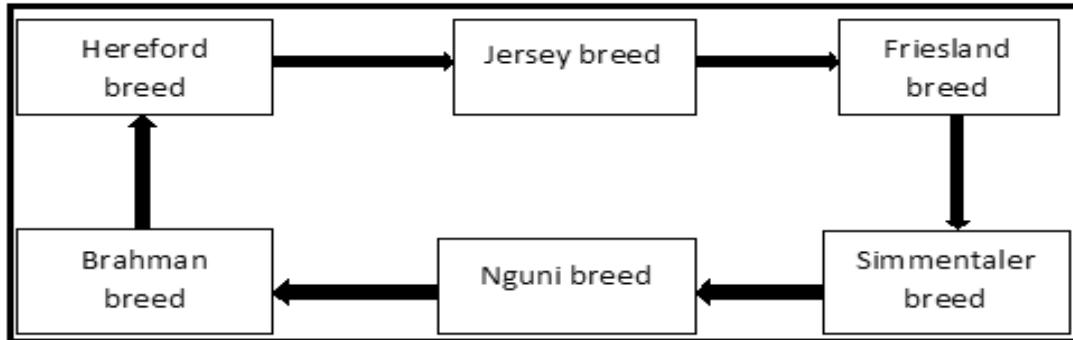
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QUESTION 4: ANIMAL STUDIES

Start this question on a NEW page.

- 4.1 The flow diagram below shows different types of beef breeds and milk breeds. Study the diagram and answer questions that follow.



- 4.1.1 Identify the TWO exotic beef breeds in the diagram above. (2)
- 4.1.2 Refer to the diagram 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)
 - (c) This breed produces both meat and milk of good quality (1)
- 4.1.3 List THREE beef breeds not mentioned in the diagram. (3)
- 4.1.4 Distinguish between the *exotic* and *indigenous* breeds. (2)

4.2 The pictures below show a male and female sheep on a farm.



- 4.2.1 Provide the name for sheep **A** and **B**. (2)
- 4.2.2 Tabulate the **visible** differences between sheep **A** and **B** under the following headings:
- (a) Body size (2)
 - (b) Neck and head (2)
- 4.2.3 Name **THREE** main sheep breeds based on their utilisation and products derived from each. (3)



4.3 The veld ram auctions of the Angora Ram Breeders' Society are popular. According to farmers, these rams are kept on the same veld, where they receive a lick. They are shorn and dosed as one group. The progress of the animals is then compared. The Angora producers in the Eastern Cape have a distinct advantage – they are able to get together and network during selection days and auctions.

[Adapted from *Stock farm, Volume 9, No. 2, 2019*]

4.3.1 Refer to the scenario above and suggest a reason why farmers in the Eastern Cape should continue producing Angora rams. (1)

4.3.2 Give the name of the main product an Angora goat produces. (1)

4.3.3 Name TWO goat breeds a farmer can use to produce dairy products. (2)

4.3.4 Explain why Angora goats must be kept in an area with a moderate climate. (2)

4.3.5 Suggest the name of a meat goat breed with a red colour and developed in South Africa. (1)

4.4 When pigs were first domesticated, they were used for their meat and for their fat. Commercial farmers began to practise intensive pig farming. Example: a pig for meat or one with more fat for bacon and lard production.

4.4.1 Refer to the passage above and name TWO main products of pigs. (2)

4.4.2 Suggest the purpose for slaughtering pigs with the following mass:

(a) 45 kg (1)

(b) 90 kg (1)

4.4.3 Provide THREE characteristics of improved pig breeds that make them suitable for commercial farming. (3)

4.5 Chickens are omnivores, which means they eat food from plant origin such as seeds as well as food from 'animal' origin such as insects. Chickens normally live in a house together in flocks.

Provide TWO facilities a farmer can use to control the temperature in a house of chickens.

(2)
[35]

TOTAL SECTION B: 105
GRAND TOTAL: 150













