Province of the
EASTERN CAPE
EDUCATION

NATIONAL
SENIOR CERTIFICATE

GRADE 10

NOVEMBER 2020

AGRICULTURAL SCIENCES P1
(EXEMPLAR)

MARKS: 150

TIME: 2½ hours

This question paper consists of 15 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, for example 1.1.11 A.
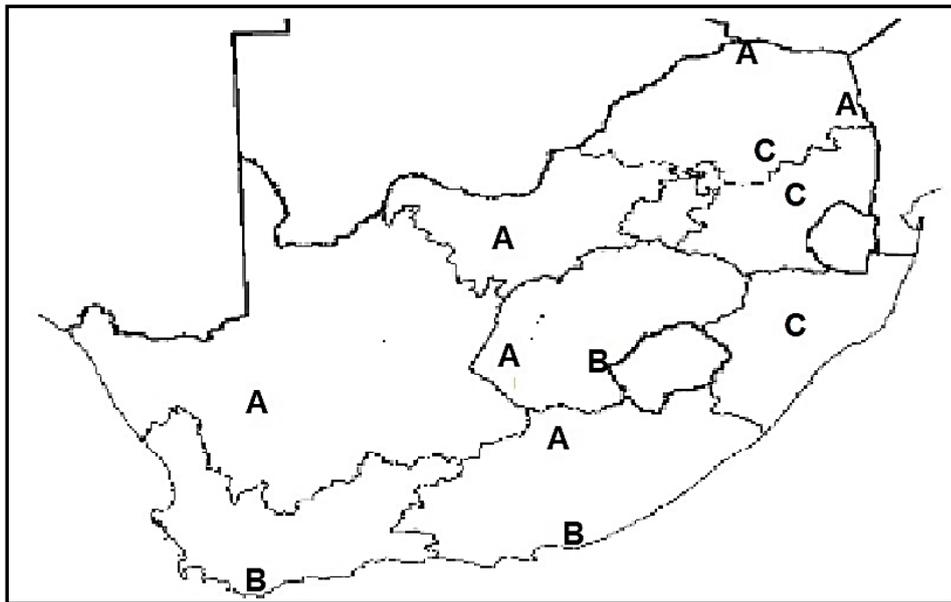
    1.1.1   … is the height of the land above sea level that determines the amount of rainfall received in that particular area.

        A   Slope
        B   Aspect
        C   Altitude
        D   Climate

    1.1.2   The soil is where … start to grow normally poor, shallow and the ability to hold water is low.
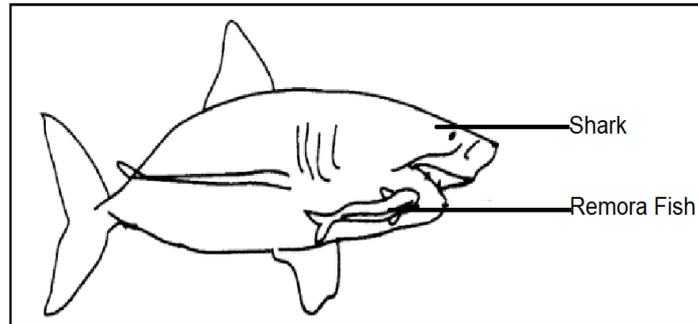
        A   pioneer plants
        B   climax plants
        C   sub-climax plants
        D   sub-pioneer plants

    1.1.3   The type of veld in South Africa indicated by the letter **A**.
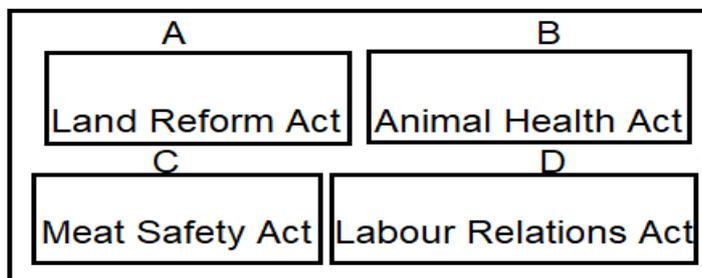

        A   Sweet veld
        B   Sour veld
        C   Mixed veld
        D   Nutritious veld

1.1.4   The symbiotic relationship shown by the remora fish and shark in the diagram below is an example of …

A   parasitism.
B   mutualism.
C   predation.
D   commensalism.

1.1.5   The methods of processing grains such as wheat and maize into flour or maize meal.

A   Fermentation and drying
B   Canning and smoking
C   Milling and grinding
D   Freezing and corning

1.1.6   One of the following statements is INCORRECT with regard to the impact of population growth in South Africa.

A   Demand for food increases
B   Agricultural land increases
C   Natural resources are depleted
D   Urban areas grow larger

1.1.7   Laws that aim to prevent diseases in livestock animals and meat.
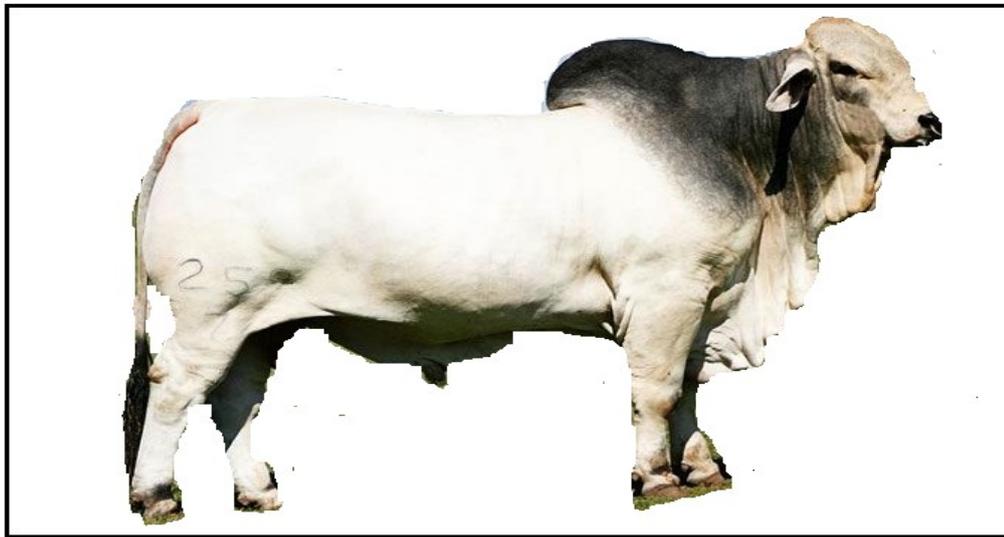

A   A and B
B   A and C
C   B and C
D   C and D

1.1.8   These are the most popular characteristics of hot-blooded horses.

    (i)   They are used for sport
    (ii)   They are speedy and intelligent
    (iii)   They are large and muscled
    (iv)   They are long-legged

Choose the correct combination.

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

1.1.9   The type of cattle shown in the picture below is an example of a beef producing breed known as …

    A   Angus.
    B   Charolais.
    C   Hereford.
    D   Brahman.

1.1.10   The major difference between ruminant and non-ruminant:

    A   Urination
    B   Excretion
    C   Stomach
    D   Swallowing

                       (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:	Denitrification	The conversion of ammonium compounds into nitrites and nitrates
	B:	Nitrification	
1.2.2	A	Nama-Karoo	South African biome(s) threatened by the spread of invasive plants
	B:	Fynbos	
1.2.3	A:	Green paper	Preliminary report on a government proposal for a new or amended law
	B:	Amendment	
1.2.4	A:	Indigenous	Knowledge gained by oral and cultural practices
	B:	Traditional	
1.2.5	A:	Indigenous breed	High disease resistance and lower food conversion ratio
	B:	Improved breed	

(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 (1.3.1–1.3.5) in the ANSWER BOOK.

1.3.1 Different plants and animals occupying a particular area

1.3.2 The systems of food chains that is joined to one another

1.3.3 The land owned by permanent farm labourers to use for their own purposes

1.3.4 The group of animals that swallow their food and then regurgitate and re-chew it repeatedly

1.3.5 Chickens that are kept in order to produce a large number of eggs

(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 (1.4.1–1.4.5) in the ANSWER BOOK.

    1.4.1   Plants that are adapted to very dry habitats are called <u>hydrophytes</u>.

    1.4.2   The formal <u>subsistence</u> agricultural sector is comparatively well developed on a large scale.

    1.4.3   <u>Commodity</u> organisations are business organisations that are owned and operated by farmers for their shared benefit.

    1.4.4   <u>Bos indicus</u> cattle descended from the Eurasian sub-species.

    1.4.5   The <u>Toggenburg goat</u> originated in the Saanen Valley in Switzerland and was imported to South Africa.
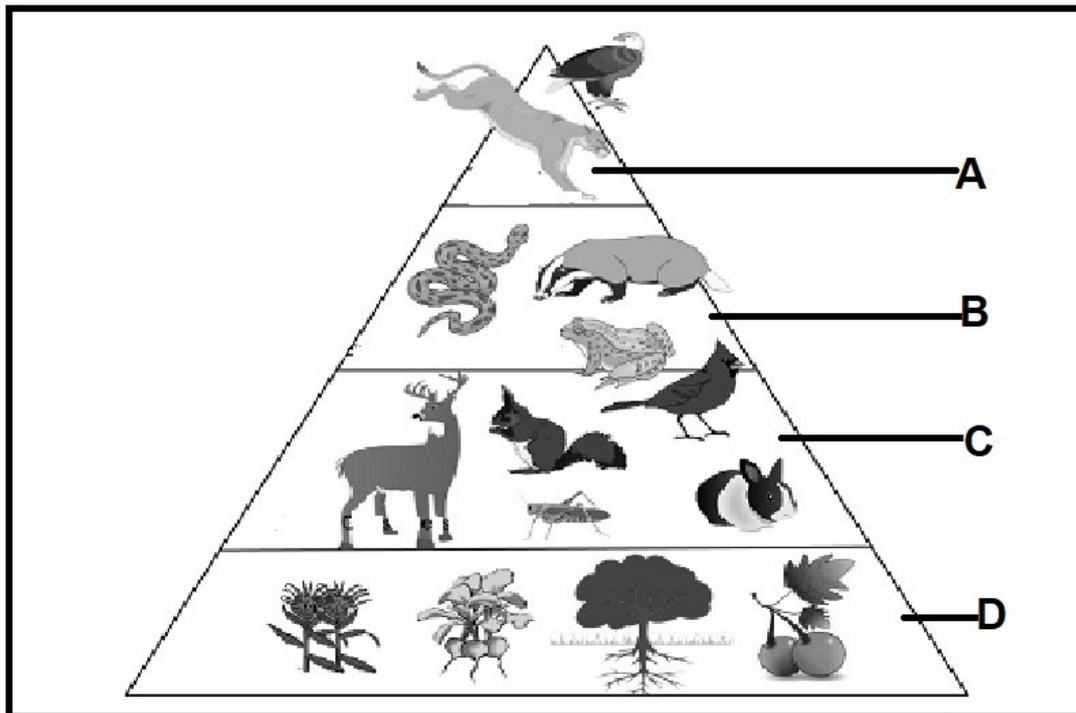
        (5 x 1)   (5)

TOTAL SECTION A: 45
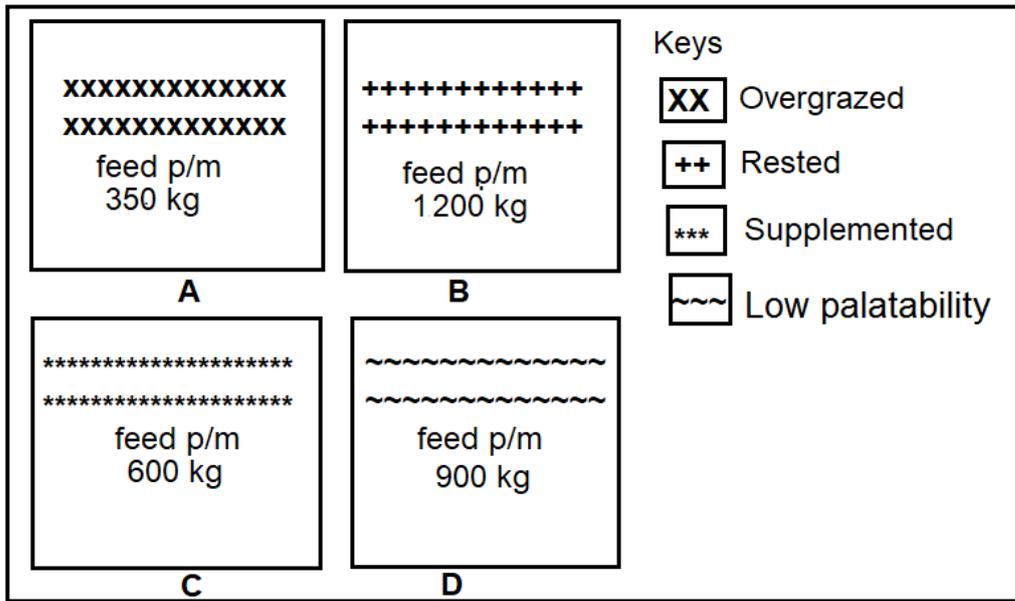
SECTION B

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 on 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 **C** to the organisms in letter **B**.   (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 four pastures for different farms with the amount of feed produced per month.

2.2.1 Define the term *pasture*. (2)

2.2.2 Identify the pasture (A–D) that is poorly managed. (1)

2.2.3 Give TWO reasons for your answer to QUESTION 2.2.2. (2)

2.2.4 Pasture **B** is well managed. Support the statement with TWO visible reasons from the diagram. (2)

2.2.5 Suggest THREE management practices that lead to a good pastural condition. (3)

2.2.6 Use the information provided to each pasture and calculate the production percentage for pasture **C**. Show all calculations. (3)

2.2.7 Calculate the quantity of feed to be produced by pasture **D** per year. (2)

2.3 The table below shows four South African biomes namely grass land, savannah, fynbos and forest.

Biomes	Grasses (%)	Trees (%)	Bushes (%)	Rainfall	Location
A	18	12	70	Winter	WC
B	78	15	7	Summer	GP, KZN, EC, FS
C	8	80	12	All year	WC and EC
D	35	30	25	Summer	KZN, LP, NW, MP, NC

2.3.1 Identify the biome represented by letters **A** and **B**. (2)

2.3.2   Identify the biome from the table that is suitable for the following activities:

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

(b)   Grapes are planted for wine processing factories   (1)

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

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

2.3.3   Name TWO South African biomes not mentioned in the table.   (2)

2.4   The impacts of climate change on agriculture in South Africa will be mainly due to increased temperatures and decreased rainfall.

Name TWO negative effects of climate change in South Africa.   (2)

[35]

QUESTION 3: AGRI-INDUSTRY

Start this question on a NEW page.

3.1   The table below shows the food security in South Africa's provinces.

Provinces	Income per person (R)	Average consumption per person (kg)		
		Maize	**Wheat**	**Potatoes**
Western Cape	14 304	97,05	39,01	25,66
Eastern Cape	3 955	92,25	36,39	22,11
Kwazulu-Natal	5 924	94,91	37,92	25,12
North West	4 995	94,49	37,16	24,96
Limpopo	2 288	92,89	35,50	21,18

3.1.1   Refer to the table above and identify the:

(a) Richest province																(1)

(b) Poorest province															(1)

3.1.2 Give the reason for your answers in QUESTION 3.1.1.						(2)
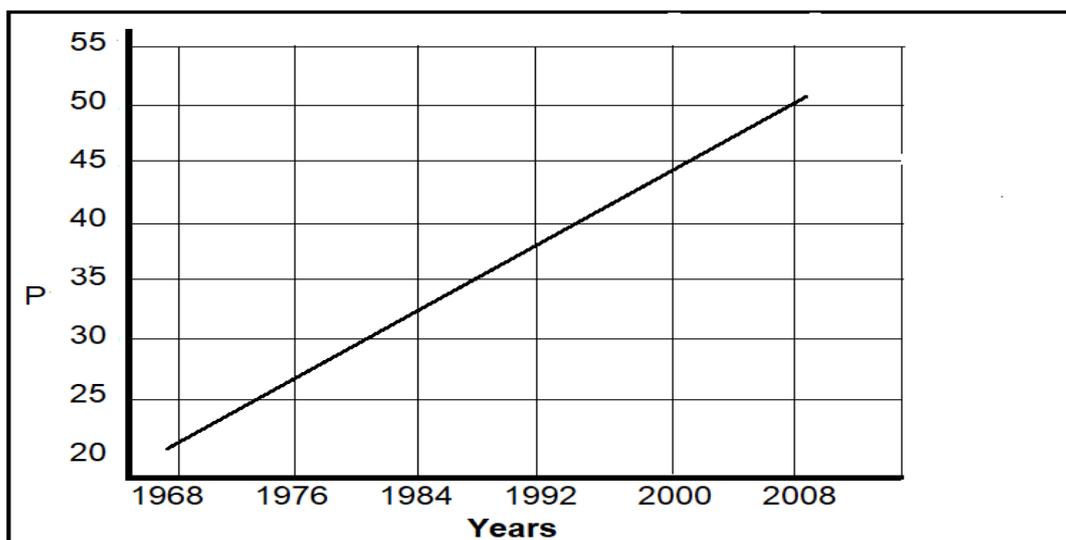
3.1.3 Classify the type of food depicted on the table above.					(1)

3.1.4 Suggest a reason why the food mentioned in QUESTION 3.1.3 is mostly used by people.															(1)

3.1.5 State THREE other types of food not mentioned in QUESTION 3.1.3.		(3)
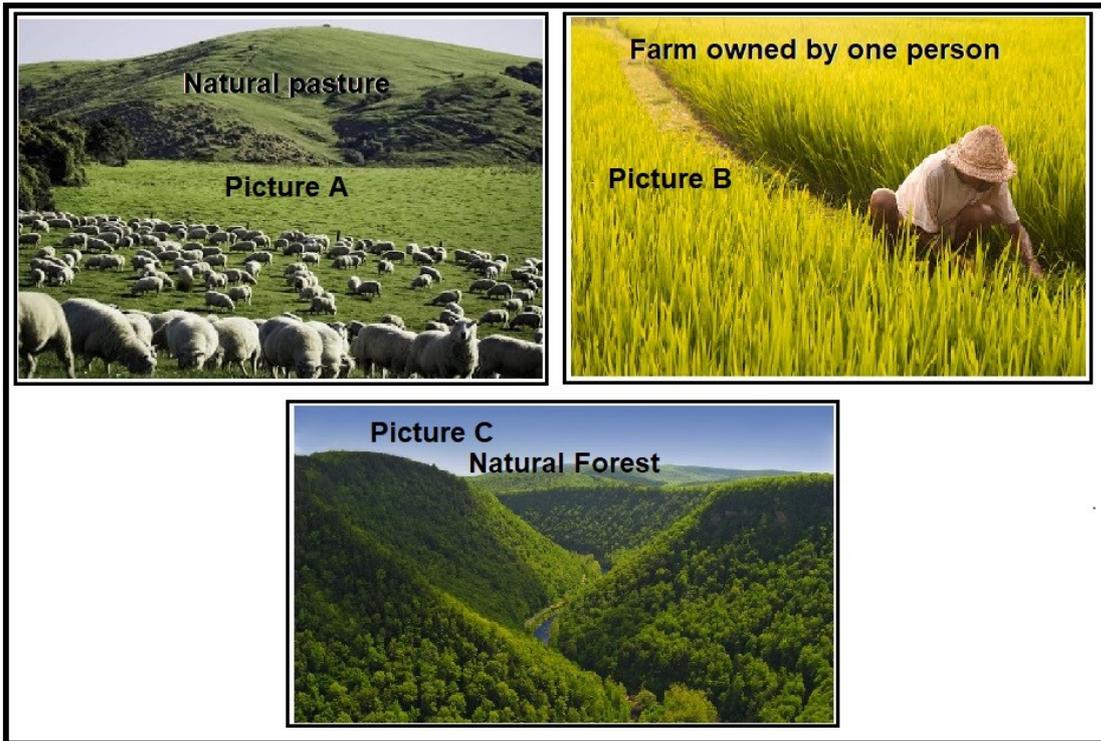
3.1.6 Draw a bar graph that shows all the provinces in the table and the income per person.															(6)

3.2   The graph below shows the population (p) of South Africa in millions (m) between 1968 and 2008.

3.2.1   Indicate the number of people in South Africa during the year 2000.   (1)

3.2.2   Explain the trend shown by the population size over the years.   (2)

3.2.3   Suggest THREE negative effects of population growth on the agricultural sector.   (3)

3.3   The pictures below show the models of landownership in South Africa.

3.3.1   Identify the models of landownership shown in PICTURES **A**, **B** and **C**.   (3)

3.3.2   Identify the picture (A, B or C) that matches the following laws:

(a)   The Conservation of Agricultural Resources Act   (1)

(b)   The Land Reform (Labour Tenants) Act   (1)

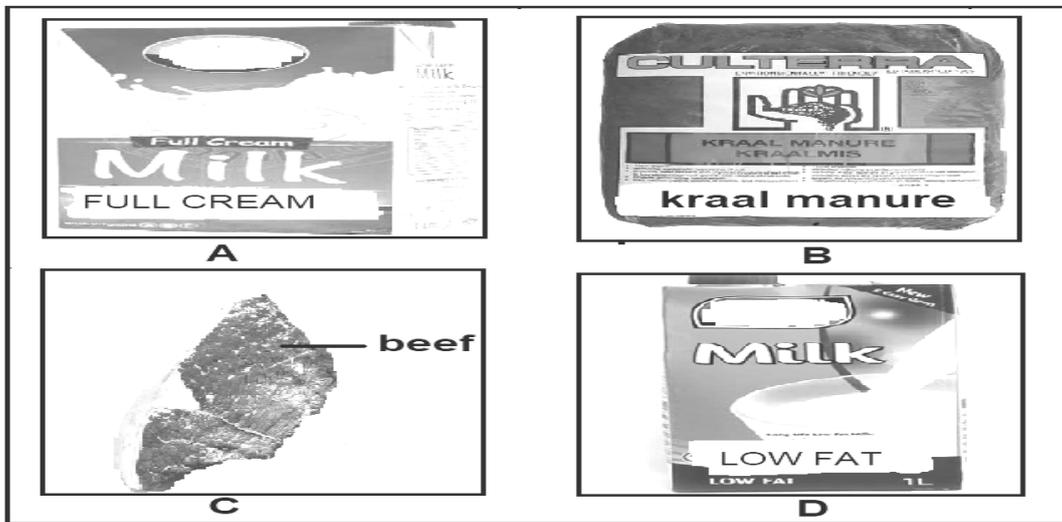3.4   The picture below a farm where two different crops are grown next to each other.

3.4.1   Name the indigenous knowledge used by the farmer as illustrated in the picture above.   (1)

3.4.2   Give a reason to support your answer to QUESTION 3.4.1.   (1)

3.4.3   Explain the reason for the farmer to use the knowledge mentioned in QUESTION 3.4.1.   (1)

3.4.4   Deduce TWO products the farmer produces.   (2)

3.4.5   Tabulate the differences between indigenous knowledge and scientific knowledge under the following headings:

(a)   Age of the knowledge   (2)

(b)   Method of learning the knowledge   (2)
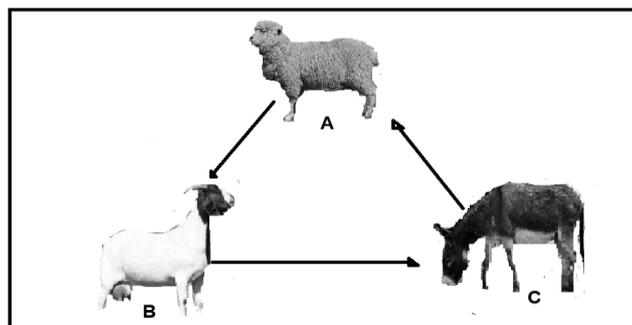
[35]

QUESTION 4: ANIMAL STUDIES

Start this question on a NEW page.

4.1   The pictures below show different products for cattle breeds.

4.1.1   Refer to the pictures above and identify the by-products. Write the letter and the name of the product.   (2)

4.1.2   Identify the product that best matches to the following animals except product **B**. Write ONLY the letter.

(a)   Friesland breed   (1)

(b)   Hereford breed   (1)

(c)   Jersey breed   (1)

4.1.3   Name any THREE indigenous breeds that will be suitable to produce product **C**.   (3)

4.1.4   Name TWO dairy breeds not mentioned in QUESTION 4.1.2.   (2)

4.2   The diagram below shows three animals on a farm.

4.2.1   Refer to the diagram above and identify TWO grazers.   (2)

4.2.2   State whether animal **B** is a ruminant or non-ruminant.   (1)

4.2.3   Give a reason to support your answer to QUESTION 4.2.2.   (1)

4.2.4   Suggest TWO reasons for the domestication of farm animal **A**.   (2)

4.2.5   Identify the farm animal from the diagram with the following qualities:

      (a)   Adapted to desert areas and very load vocalisation   (1)

      (b)   Resistant to fleece rotting and blowfly attack   (1)

      (c)   The animal is kept for meat production and it is indigenous   (1)

4.2.6   Tabulate TWO differences between mohair fibres and wool fibres.   (4)

4.3 | The steady spread of African swine fever through the EU and other countries since 2007 has prompted a recent meeting between leaders. Approximately 45 countries and territories are currently experiencing African swine fever. To stop the spread of this disease, farmers must respect rules so that the disease does not become endemic. African swine fever affects mainly pigs.

                                      [Adapted from *Farmer's Weekly*, 27 Sept. 2019]

4.3.1   Deduce the problematic disease that affect the farm animals.   (1)

4.3.2   Give the farm animal that will be infected by the disease mentioned in QUESTION 4.3.1.   (1)

4.3.3   Explain how farmers can prevent the spread of the disease mentioned in QUESTION 4.3.1.   (2)

4.3.4   Name TWO pork breeds.   (2)

4.4 | A hen should have a warm, dry, protected area or nest box in which to lay her eggs. As she will spend long periods in the nest, put water and food within reach.

4.4.1   Give any TWO requirements of a healthy nest box for laying hens.   (2)

4.4.2   Name THREE basic requirements for successful production of chickens.   (3)

4.4.3   Provide the name of meat producing chickens.   (1)

                                                     [35]

TOTAL SECTION B: 105
GRAND TOTAL: 150