Candidate Number	Candidate Name

JUNIOR SECONDARY CERTIFICATE

AGRICULTURE 1600/1

WRITTEN PAPER 2 hours 15 minutes

Marks 130 **2019**

Additional Materials: Multiple-choice answer sheet
Non-programmable calculator
Soft clean eraser
Soft pencil (type B or HB)

INSTRUCTIONS AND INFORMATION TO CANDIDATES

SECTION A

- Make sure that you receive the multiple-choice answer sheet with **your Candidate Number** on it to answer **Section A.**
- There are **thirty** questions.
- Answer **all** questions.

SECTION B

- Write your Candidate Number and Candidate Name in the spaces at the top of this page.
- Write your answers on the Question Paper in the spaces provided.

- Questions **1** to **6** are compulsory.
- Answer **either** Question 7 **or** Question 8.
- Answer **either** Question 9 **or** Question 10.

- Write in dark blue or black pen.
- Use a pencil for diagrams, graphs or rough working.
- Do not use correction fluid.
- You may use a non-programmable calculator.
- The number of marks is given in brackets [ ] at the end of each question or part question.

For Examiner's Use	
Section B	
1	
2	
3	
4	
5	
6	
7/8	
9/10	
TOTAL	

Marker	
Checker	

This document consists of **27** printed pages.

Republic of Namibia

MINISTRY OF EDUCATION, ARTS AND CULTURE

[Turn over

SECTION A

- For each question there are four possible answers, **A**, **B**, **C** and **D**.
- Choose the **one** you consider correct and record your choice in soft pencil on the multiple choice answer sheet.
- If you want to change an answer, thoroughly erase the one you wish to delete.

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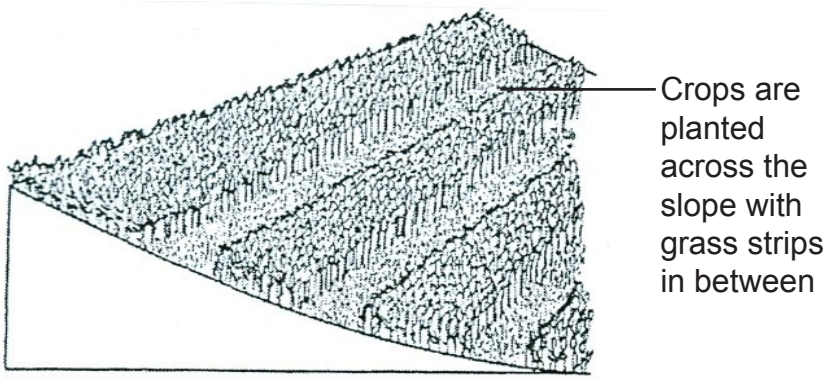
1 The diagram shows crops planted with grass strips in between.

Why is this practice applied?



A improves growth
B improves yield
C prevents erosion
D prevent weeds

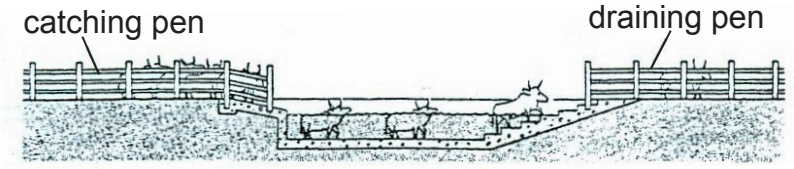
2 Which of the following crops fits into the nitrogen cycle?

A beans
B maize
C sorghum
D wheat

3 Which of the following will have an influence on soil pH?

A cultivation
B rainfall
C temperature
D wind

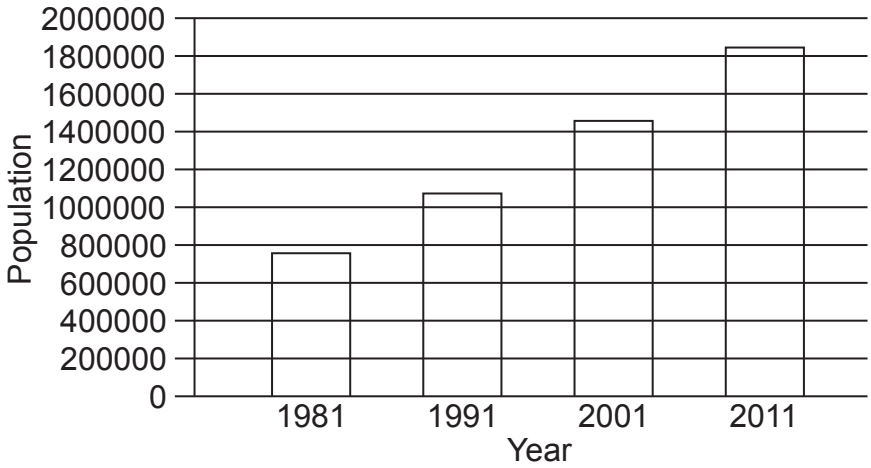
4 The diagram shows an activity taking place on an animal farm.



What is controlled during this activity?

A cattle ticks
B liver flukes
C round worms
D tape worms

5 The graph shows the population increase in Namibia from 1981 - 2011.



In which year was the population the second highest?

A 2011
B 2001
C 1991
D 1981

6 Which micro-organisms affect crops when humidity is high?

A bacteria
B fungi
C protozoa
D virus

7 What is likely to be a result of overstocking?

A improved animal growth
B increased soil erosion
C increased grass growth
D reduced weed growth

8 What is the increase of undesirable shrubs and bushes in an area previously covered with grass called?

A bush control
B bush encroachment
C deforestation
D desertification

9 What is the name given to areas planted with grass species of high nutritional value?

A fodder
B grassland
C pasture
D vegetation

10 What is a characteristic that cannot be seen but is still part of an organism?

A genotype
B hybrid
C monohybrid
D phenotype

11 The diagram shows a farm.

What is the farmer doing to prevent soil erosion on the hill?

A contour ploughing
B deep ploughing
C mulching
D plugging gullies

12 Why are carbohydrates necessary in the diet of farm animals?

A to prevent infections
B to provide energy
C to produce more milk
D to strengthen bones

13 The diagrams show how crops were moved in a cycle of rotation for a period of two years.

Year 1

field 1	field 2	field 3	field 4
maize	beans	melons	sorghum

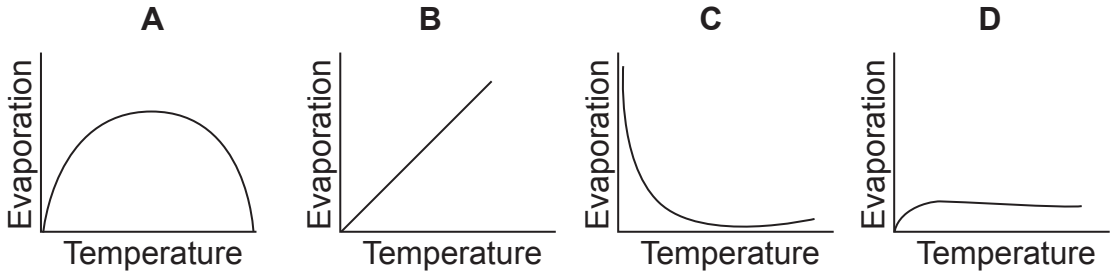
Year 2

field 1	field 2	field 3	field 4
sorghum	maize	beans	melons

What will the sequence of the crops be in year 4?

	field 1	field 2	field 3	field 4
A	beans	melons	sorghum	maize
B	maize	beans	sorghum	melons
C	melons	beans	maize	sorghum
D	melons	sorghum	maize	beans

14 Which graph shows the effect of temperature on evaporation?



15 What is the difference between HIV and AIDS?

A AIDS is a virus causing HIV.

B HIV is a disease caused by AIDS.

C HIV is a disease while AIDS is a virus.

D HIV is a virus while AIDS is a disease.

16 What type of weathering of rocks is caused by water that freezes in the cracks between the rocks?

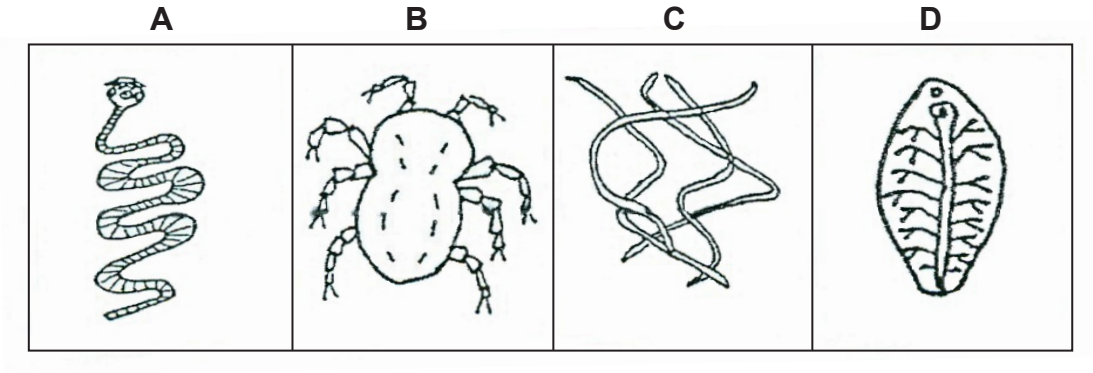
A biological weathering

B chemical weathering

C mechanical weathering

D physical weathering

17 Which of the following parasites is an ecto-parasite?



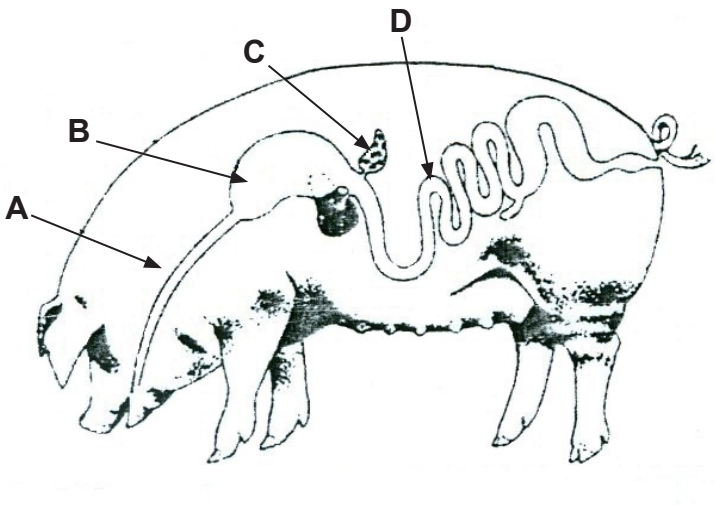
18 Which farming practice can be described as planting the same crop on the same piece of land year after year?

A cash crop farming
B commercial farming
C crop rotation
D monoculture

19 What is formed when rain water combines with carbon dioxide?

A carbonic acid
B iron oxide
C limestone
D sulphuric acid

20 The diagram shows the digestive system of a non-ruminant.



Which part has the same function as the abomasum in a ruminant?

21 Which statement describes domestication?

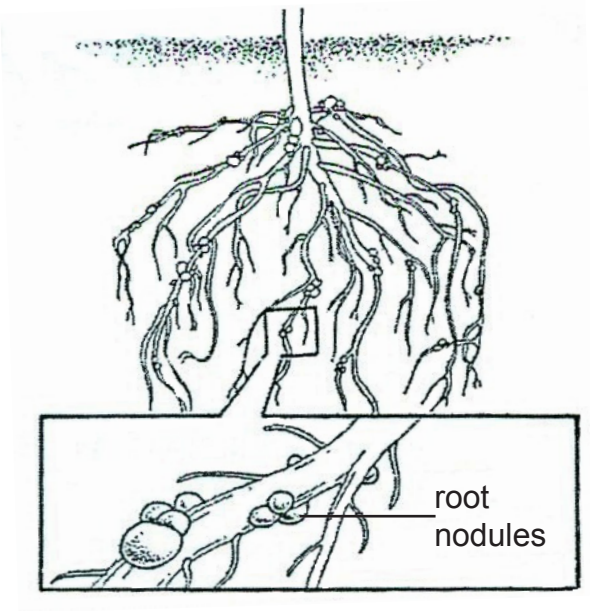
A Animals are controlled and bred by humans.
B Nomadic farmers follow herds of animals.
C People gather plants and fruit for food.
D People hunt wild animals for meat.

22 The diagram shows a bag of fertilisers.

Which nutrient is represented by number 3 in the ration 2:3:4.

A calcium
B nitrogen
C phosphorus
D potassium

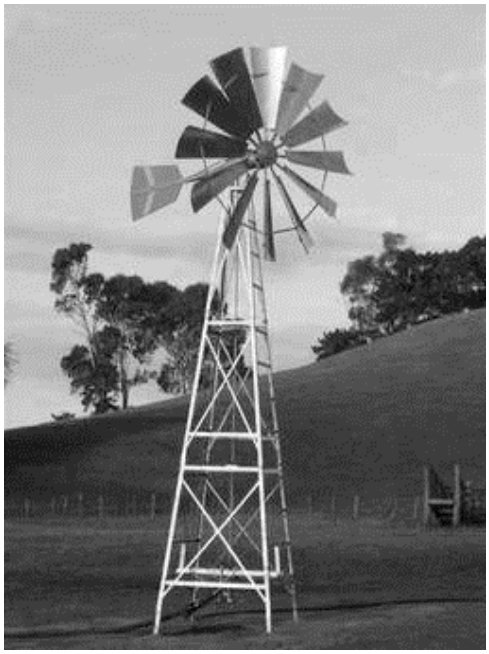
23 The diagram shows a type of a root system of a plant.



Which plant nutrient is provided by this plant?

A magnesuim
B nitrogen
C phosphorous
D potassium

24 The diagram shows a source of water common in drier areas of Namibia.



Which of the following environmental factors is responsible for the functioning of this water source?

A humidity
B sun
C temperature
D wind

25 Which type of farming produces food for the family and sells the surplus?

A commercial farming
B shifting cultivation
C slash and burn cultivation
D subsistence farming

26 The statements below describe a soil type.

- holds more water
- difficult to cultivate
- contains minerals
- bad drainage

Which soil type is best described by the above statements?

A clay
B loam
C sand
D silt

27 The diagram shows a layer of mulch between crops.

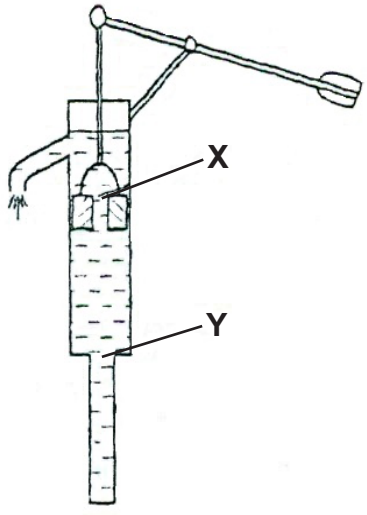
What is the effect of mulch on the plot?

A increased evaporation
B increased transpiration
C reduced evaporation
D reduced transpiration

28 What is improved by removing excess water from the soil?

A air
B minerals
C pH
D water

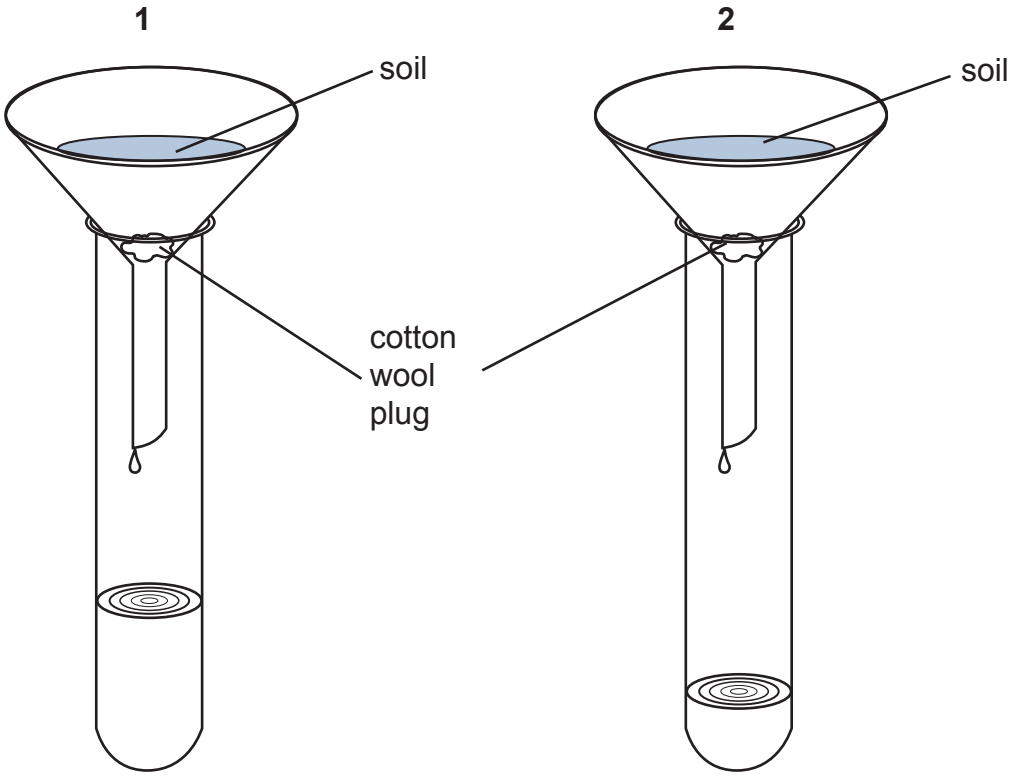
29 The diagram shows a pump for raising water from a well.



What would be the purpose of putting valves at **X** and **Y**?

A to control the flow of water
B to keep out rodents
C to keep the pump clean
D to prevent rusting

30 The diagrams show test tubes that contain two types of soil.



Which combination is correct for test tubes **1** and **2**?

	1	2
A	clay	clay
B	clay	sand
C	sand	clay
D	sand	sand

SECTION B

- Answer this section in the spaces provided.
- Questions **1 to 6** are compulsory.
- Answer **either** Question 7 **or** Question 8.
- Answer **either** Question 9 **or** Question 10.

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1 GENERAL AGRICULTURE: COMPULSORY

(a) State any **four** environmental factors, which limit the potential of land for crop production.

1 .....

2 .....

3 .....

4 ..... [4]

(b) Tabulate **three** differences between commercial and communal farming.

commercial farming	c**ommunal farming**
1	.....
2	.....
3	.....

[3]

(c) Outline **two** ways how wind can damage plants.

1 .....

.....

2 .....

..... [2]

(d) Draining and clearing are two methods of reclaiming land for agricultural purposes. Name **any other three** ways of reclaiming land for agricultural purposes.

1 .....

2 .....

3 ..... [3]

(e) The table below shows different land tenure systems with some advantages and disadvantages given. Choose which advantage or disadvantage would match each land tenure system best. Write the number next to the corresponding letter below the table.

land tenure system	advantage/disadvantage
A Free hold	**1** The land cannot be used as security to obtain a bank loan
B State land	**2** The land is available for development by the state to benefit the country's residents
C Communal	**3** The land is farmed by a tenant farmer who pays rent to the owner
D Lease hold	**4** The land is expensive to purchase

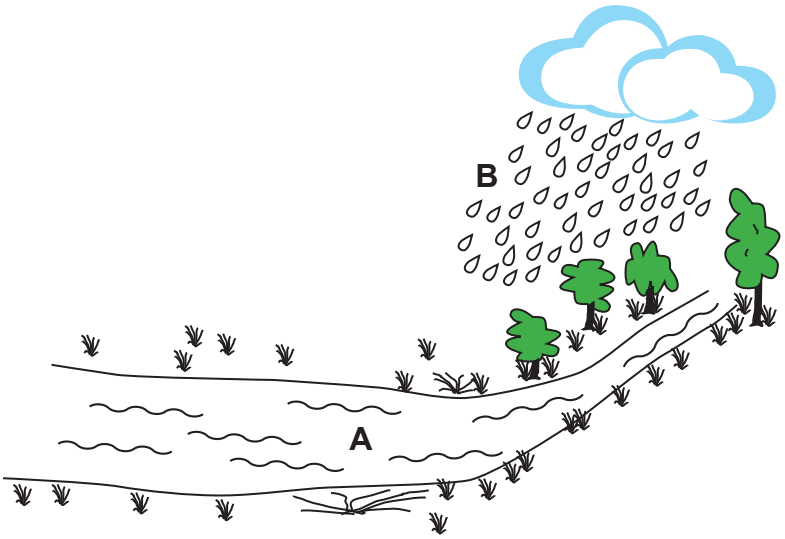
A .....

B .....

C .....

D ..... [4]

(f) The diagram shows a water cycle.

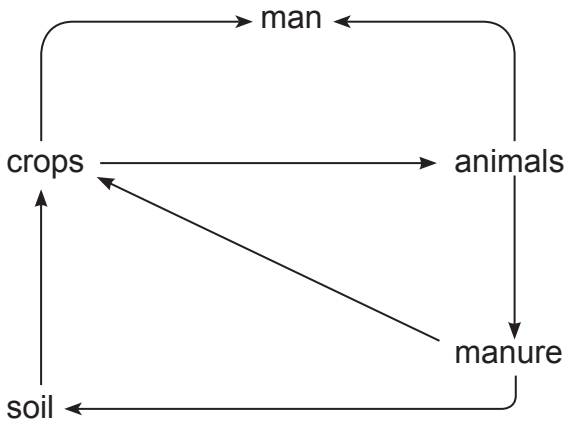


Identify stages of the water cycle labelled **A** and **B**.

A .....

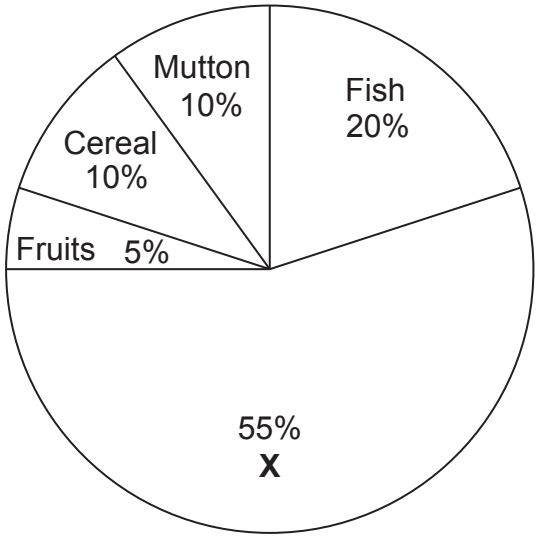
B ..... [2]

(g) Which farming method does the diagram below represent?



..... [1]

(h) The pie chart shows food produced in Namibia.



Which food product is represented by **X** in which Namibia is self sufficient?

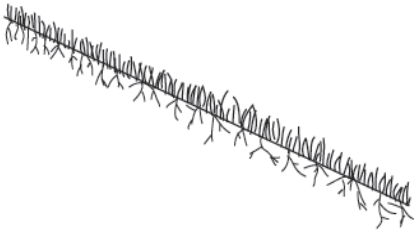
..... [1]

[20]

2 SOIL: COMPULSORY

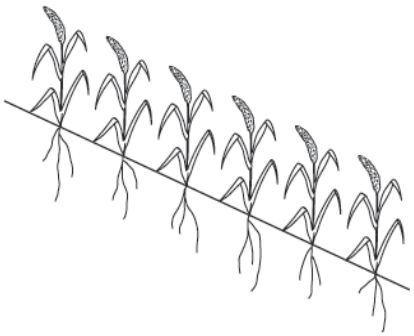
The diagram below shows a slope with permanent grass cover and a slope with a crop of mahangu.

permanent grass cover



slope **A**

mahangu crop



slope **B**

The table compares the effect of growing grass on a slope and growing a crop of mahangu on a slope.

	grass covered slope **A**	mahangu covered slope **B**
soil lost / tones per hectare	0	78
water run-off /% of rainfall	1.9	20

(a) (i) Suggest **two** reasons for the differences in amount of soil lost and water run-off between slope **A** and slope **B**.

.....

.....

.....

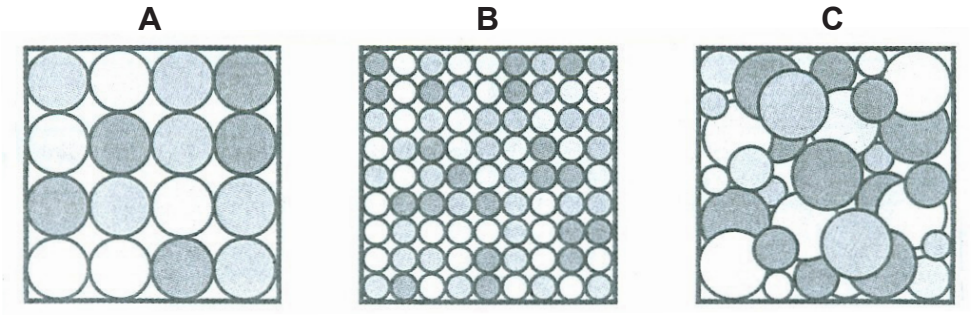
..... [2]

(ii) List **two** cultivation methods which could be used to reduce soil erosion on sloping land.

1 .....

2 ..... [2]

(b) The diagram shows three types of soils.



(i) Identify the types of soils.

A .....

B .....

C ..... [3]

(ii) Which soil type is best for plant growth?

..... [1]

(iii) Explain your answer in **(b)(ii)**.

.....

..... [1]

(c) 'Sausage' test is a test used to determine soil structure. Clay soil can form a sausage better than other soil types.

Explain why clay soil forms a sausage.

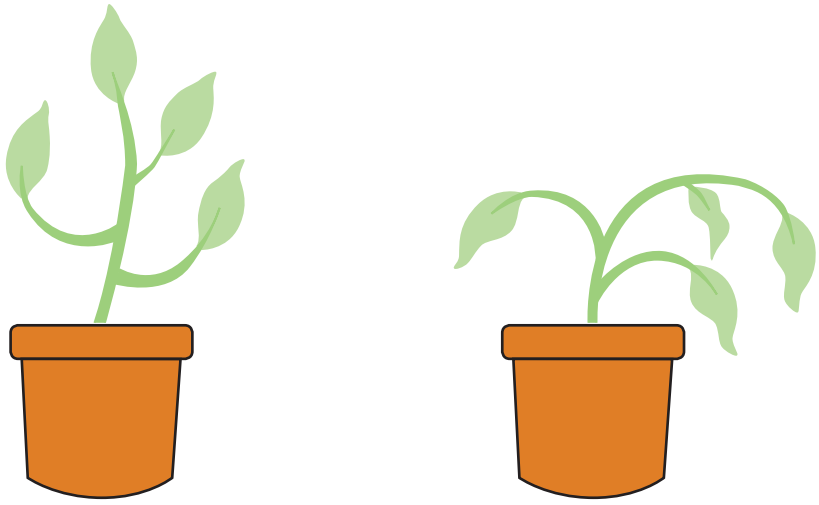
.....

.....

.....

..... [2]

(d) The diagram shows two identical potted plants **A** and **B** which were watered using liquids with different salt concentrations. The same amount of liquid was applied over the same period of time.



Which pot plant, **A** or **B**, was watered with a liquid containing more salt?

..... [1]

(e) What is the process called when the soil nutrients are washed down deep into the soil, out of the reach of the plants roots?

..... [1]

(f) For each plant nutrient description or function, identify the correct mineral or nutrient.

(i) Responsible for healthy green leaves on a plant.

..... [1]

(ii) Important for root development.

..... [1]

[15]

3 GRAZING AND VELD MANAGEMENT: COMPULSORY

Peter bought a farm with an area of 3600ha. The farm has a carrying capacity of 1LSU/15 ha. Peter counts the animals on the farm and has: 160 sheep, 140 cows with 120 calves and 6 bulls. He knows the following.

1 cow = 1LSU

6 sheep = 1 cow

2 calves = 1 cow

1 bull = 2 cows

1 LSU needs 15 ha

(a) (i) Calculate the number of animals (LSU) that Peter can keep on his farm.

.....

..... [1]

(ii) Calculate the number of LSU Peter has on his farm.

.....

.....

.....

..... [1]

(iii) Is Peter overstocking or understocking? Explain.

.....

.....

.....

..... [2]

(b) Table 3.1 shows the characteristics of different types of veld. Give the answers for **(i)** and **(ii)**.

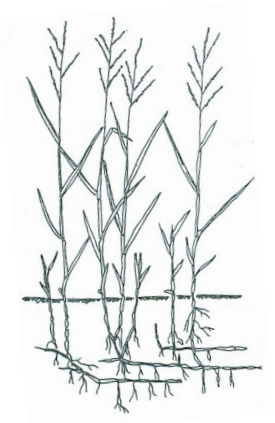
Table 3.1

characteristics	sweet veld	sour veld
soil pH	neutral to alkaline	**(i)** .....
nutritional value	**(ii)**	low when older

[2]

(c) The picture shows two types of grasses.

A



B

(i) Identify grass **A**.

..... [1]

(ii) State **two** characteristics of grass **B** based on the picture.

1 .....

.....

2 .....

..... [2]

(iii) State **one** reason why grass is important to animals.

.....

..... [1]

[10]

4 GENERAL PRINCIPLES OF ANIMAL PRODUCTION: COMPULSORY

(a) Give **two** differences between the digestive systems of ruminant and non-ruminant animals.

	ruminant	non-ruminant
1		
2		

[2]

(b) Complete the table by writing down the missing information at **A**, **B**, **C** and **D**.

Nutrient	Function
carbohydrate	**A** .....
B	provides strong skeleton and teeth
vitamins	**C** .....
D	helps with the growth process

[4]

(c) Which breeding system is used in the mating of pure-bred animals of different breeds?

..... [1]

(d) Name **three** aims of livestock breeding.

1 .....

2 .....

3 ..... [3]

[10]

5 COMMUNITY-BASED NATURAL RESOURCE MANAGEMENT: COMPULSORY

(a) There is a difference between a conservancy and a wildlife council concerning who manages it.

State who manages in each case

(i) the conservancy, ...

(ii) the wildlife council. ..... [2]

(b) Tourism play a very important part in the country.

Name **four** ways through which the community can benefit from tourism.

1 .....

2 .....

3 .....

4 ..... [4]

(c) Name **four** requirements for registering a community forest.

1 .....

2 .....

3 .....

4 ..... [4]

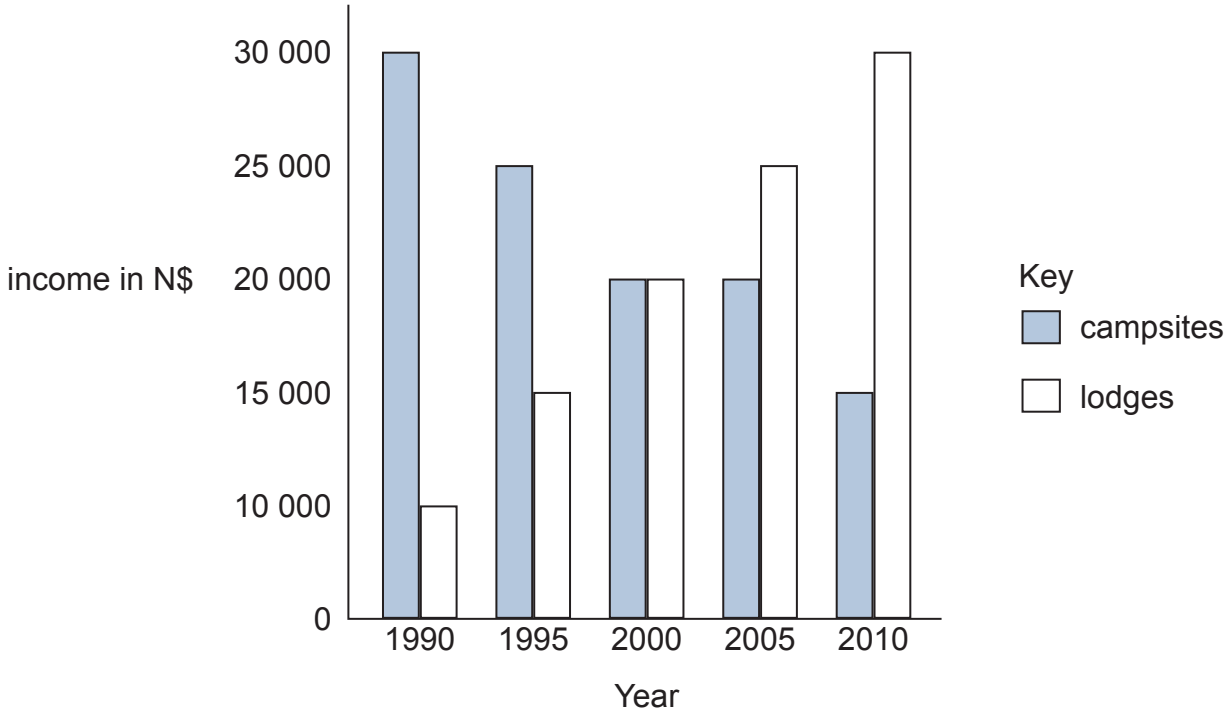
(d) What must a community look after if they wish to obtain the first priority in utilizing wood for fuel and building materials?

..... [1]

(e) What do we call the area that is taken care of by a group of people with the aim to conserve the natural resources which they share?

..... [1]

(f) The graph shows the community income from community campsites and private income from lodges over the period of 20 years.



(i) State in which year the campsites brought in the highest income.

..... [1]

(ii) What is the total income which the campsites brought in over the 20 years?

..... [1]

(iii) Suggest why the income from community campsites declined from 2005 - 2010.

.....

..... [1]

[15]

6 FARMING TECHNOLOGY - WATER SUPPLY: COMPULSORY

(a) Give the name of the following components used in water installations described below.

(i) This component connects three pipes together.

..... [1]

(ii) This connector joins **two** pipes of different diameters together.

..... [1]

(iii) This connector joins **two** pipes in a bend.

..... [1]

(iv) A small material which prevents two joined pipes from pulling apart.

..... [1]

(v) A device with a handle which is operated so that water can flow out of it.

..... [1]

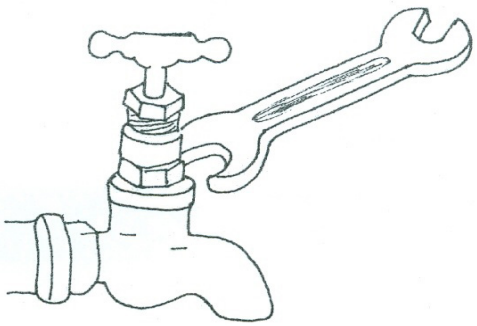
(b) What can be done to water installations to ensure that there is a steady supply of clean and uncontaminated drinking water?

.....

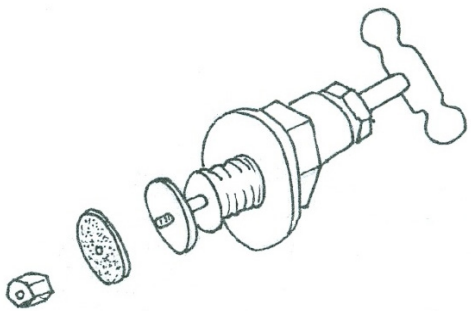
..... [1]

(c) The pictures show a procedure that sometimes has to be performed on a tap.

Step **A**



Step **B**



Describe what is taking place and why it is done.

.....

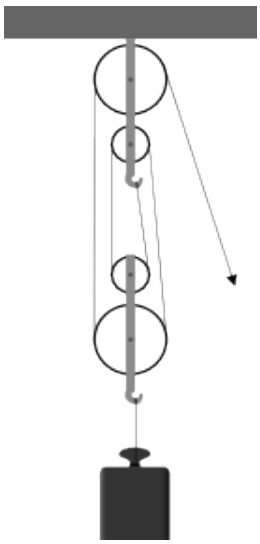
.....

.....

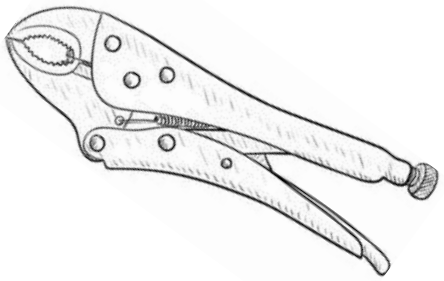
..... [2]

(d) Identify the following equipment/tools.

A



B



A.....

B..... [2]

[10]

CHOOSE EITHER QUESTION 7 OR QUESTION 8

7 TREE GROWING

(a) Match column **B** with Column **A**. Write only the letter from column **B** which describes the term in column **A**.

Column A	Column B
1 pruning	**A** branch is bent down and pegged into the soil
2 wind break	**B** Cutting a tree's branches so that the tree grows into the required shape
3 grafting	**C** A bud from one tree is collected and placed in a T-cut under the bark of a another tree of the same species
4 layering	**D** Cuttings are taken from two trees of the same species
5 budding	**E** Trees planted in a row to reduce the wind speed

1.....

2.....

3.....

4.....

5..... [5]

(b) (i) What is *deforestation*?

.....

.....

.....

..... [2]

(ii) Suggest **two** reasons for deforestation in the northern part of Namibia?

1 .....

.....

2 .....

..... [2]

(c) Name **one** tool used for pruning trees.

..... [1]

[10]

8 CEREAL CROPS

(a) Match column **A** with column **B**. Write only the letter from column **B** which describes the term in column **A**.

Column A	Column B
1 cultivar	**A** used to obtain a fine seedbed
2 plough	**B** used to prepare ridges and to do weeding
3 hoe	**C** is a staple food
4 maize	**D** different types of maize with their different characteristics.
5 harrow	**E** to till the soil

1.....

2.....

3.....

4.....

5..... [5]

(b) (i) Give **one** advantage and **one** disadvantage of organic fertilisers.

advantage .....

.....

disadvantage .....

..... [2]

(ii) List **one** example of an organic fertiliser and **one** example of an inorganic fertiliser.

organic fertiliser.....

inorganic fertiliser..... [2]

(c) Name **one** factor which determines the planting space of a crop.

..... [1]

[10]

CHOOSE EITHER QUESTION 9 OR QUESTION 10

9 OSTRICH FARMING

(a) Match the descriptions from column **B** with the terms in column **A**. Write only the letter from column **B** which describes the term in column **A**.

Column A	Column B
1 shepherds' hook	**A** notifiable disease
2 chalaza	**B** holds the yolk in position
3 knocking knees	**C** nutritional disease
4 newcastle	**D** used to catch an ostrich

1.....

2.....

3.....

4..... [4]

(b) State **one** use of an ostrich egg?

.....

..... [1]

(c) **(i)** State the management system in which ostriches are allowed to move freely and find their own food.

..... [1]

(ii) Give **one** advantage of the management system you named in **(c)(i)**.

.....

..... [1]

(d) Give the names of the following handling facilities.

(i) A place where young chicks are raised after hatching.

..... [1]

(ii) A structure where eggs are artificially hatched.

..... [1]

(e) List **one** ostrich product other than the eggs.

..... [1]

[10]

10 BEEF CATTLE

(a) Match the descriptions from column **B** with the terms in column **A**. Write only the letter from column **B** which describes the term in column **A**.

Column A	Column B
1 epididymis	**A** area where the fetus develops
2 ovary	**B** produces sperm cells
3 testis	**C** produces egg cells
4 uterus	**D** sperms are stored until needed

1.....

2.....

3.....

4..... [4]

(b) What is the difference between a contagious disease and a deficiency diseases?

.....

.....

.....

..... [2]

(c) Explain why the following handling practices are carried out in beef cattle production.

(i) Dosing,

.....

..... [1]

(ii) Castration.

.....

..... [1]

(d) Name the type of farm record in which the farmer records the number of animals on his farm.

..... [1]

(e) Which **one** Simmentaler or Brahman is a good dual purpose breed?

..... [1]

[10]