

Candidate Number <table border="1" style="width: 100%; height: 20px; border-collapse: collapse;"> <tr> <td style="width: 12.5%;"></td> <td style="width: 12.5%;"></td> <td style="width: 12.5%;"></td> <td style="width: 12.5%;"></td> <td style="width: 12.5%;"></td> <td style="width: 12.5%;"></td> <td style="width: 12.5%;"></td> <td style="width: 12.5%;"></td> <td style="width: 12.5%;"></td> <td style="width: 12.5%;"></td> </tr> </table>											Candidate Name

# JUNIOR SECONDARY CERTIFICATE

<b>AGRICULTURE</b>	<b>1600/1</b>
WRITTEN PAPER	2 hours 15 minutes
Marks 130	<b>2018</b>
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	
<b>TOTAL</b>	

Marker	
Checker	

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

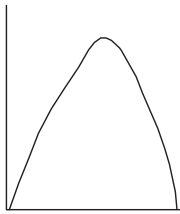


**Republic of Namibia**  
**MINISTRY OF EDUCATION, ARTS AND CULTURE**

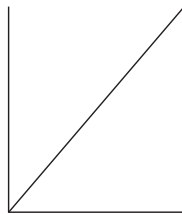
## SECTION A

- Answer **all** the questions.
  - For each question there are four possible answers, **A, B, C** and **D**.
  - Choose the **one** you consider correct and record your choice in a 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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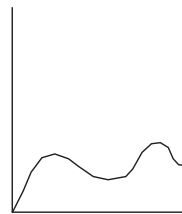
1 Which graph shows the effects of an increase in temperature on evaporation?



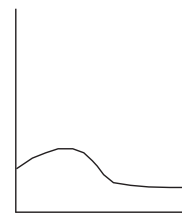
A



B



C



D

2 What is the result of selling Agricultural products to other countries?

- A food security
- B foreign currency
- C increased employment
- D raw materials for industries

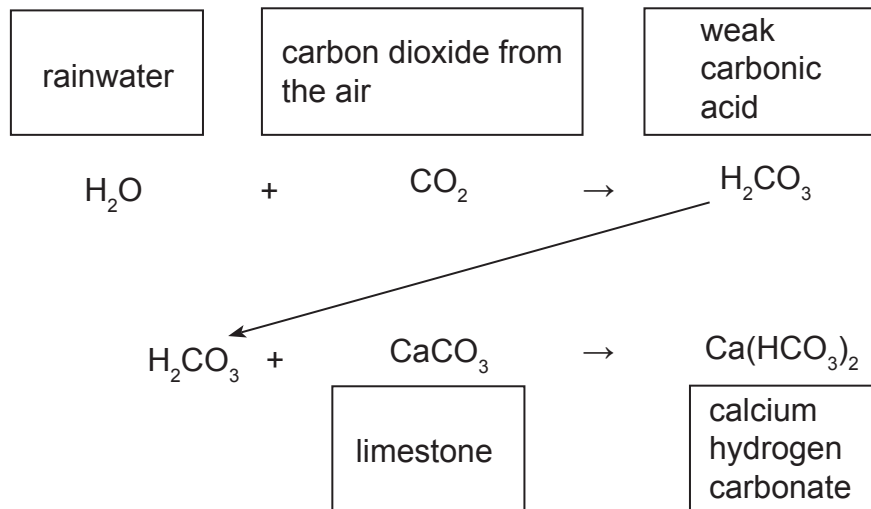
3 Which land tenure system can be used to obtain a bank loan?

- A communal land
- B free hold
- C lease hold
- D state land

4 Which combination is correct for HIV and AIDS?

	<b>AIDS</b>	<b>HIV</b>
<b>A</b>	bacteria	virus
<b>B</b>	disease	bacteria
<b>C</b>	disease	virus
<b>D</b>	virus	bacteria

5 Study the diagram below.



Which type of weathering is illustrated by the diagram?

- A biological
- B chemical
- C mechanical
- D physical

6 Which of the following is the correct combination for sand soil?

	water holding	drainage
<b>A</b>	high	good
<b>B</b>	high	poor
<b>C</b>	low	fast
<b>D</b>	low	poor

7 Which plant needs the most phosphorus to grow well?

- A beans
- B cabbage
- C carrots
- D potatoes

8 What is the effect of bush encroachment on the environment?

- A increases the quality of grazing
- B reduces overgrazing of grass species
- C replaces indigenous grass species
- D restores the fertility of the soil

9 What is a conservancy?

- A An area protected by communal farmers and where they share resources.
- B An area whose forest resources are under the community's rightful management.
- C An area with a lot of wild animals and vegetation.
- D An area where natural resources are managed and sustained.

10 Which animal can provide food without being slaughtered first?

- A cow
- B donkey
- C pig
- D sheep

11 The table shows the analysis of four foodstuffs. Which foodstuff would be most suitable for a young, growing animal?

percentage of dry matter				
	protein	carbohydrates	calcium	phosphorus
A	18	57	0.31	1.13
B	20	53	0.30	2.10
C	46	33	0.32	2.12
D	47	30	0.02	1.07

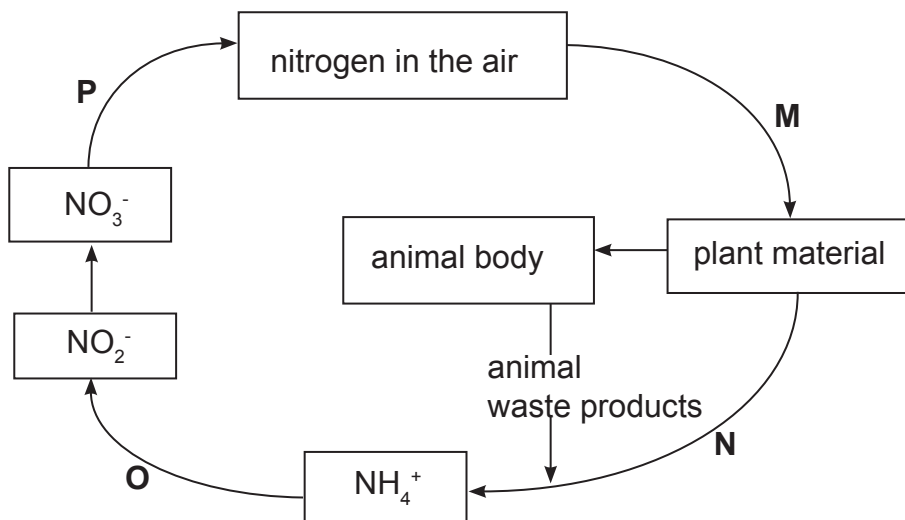
12 What is the effect of population increase on land use?

- A more land will be fertile
- B more land will be polluted
- C more land will be reclaimed
- D more land will be eroded

13 Which farming method would reduce the risk of failure?

- A crop rotation
- B mixed farming
- C monoculture
- D subsistence farming

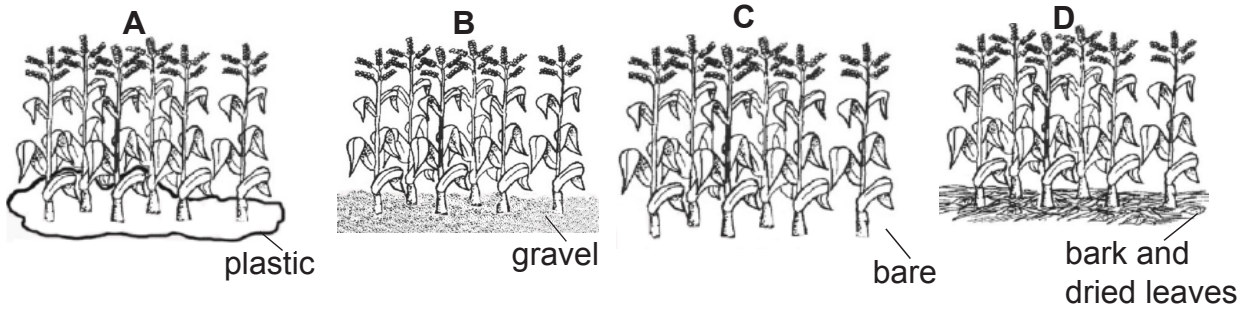
14 The diagram shows a nitrogen cycle.



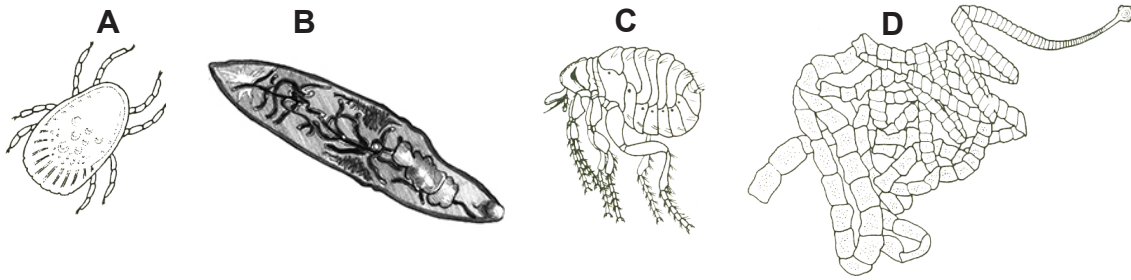
Which processes are shown at **N** and **O**?

- A ammonification and nitrification
- B denitrification and ammonification
- C nitrification and denitrification
- D nitrogen fixation and nitrification

15 Which plot will lose most moisture from the soil?



16 The picture shows parasites that affect farm animals.

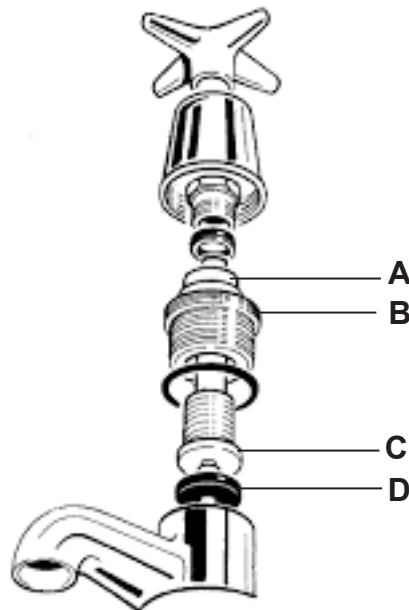


Identify the liver fluke.

17 Which document should be obtained from the Ministry of Environment and Tourism to allow communities to hunt wild animals?

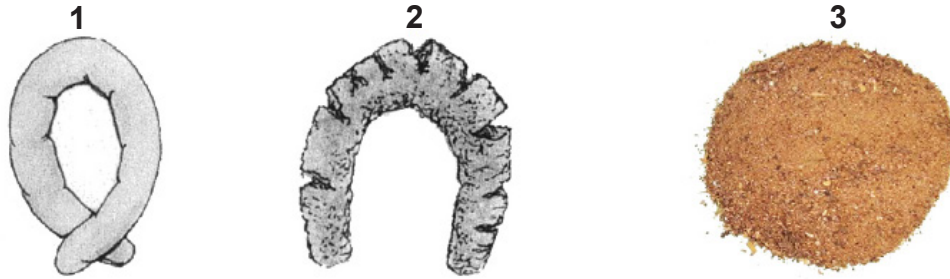
- A forest permit
- B game permit
- C gazette
- D wildlife act

18 The diagram shows a section through a water tap.



Which one is a washer?

19 The diagram shows an experiment that determines different types of soil.



Which combination is correct for soil types 1, 2 and 3?

	1	2	3
A	clay	loam	sand
B	clay	sand	loam
C	loam	clay	sand
D	sand	loam	clay

20 Which of the following food constituents will help to prevent constipation in animals?

- A concentrates
- B fats
- C mineral licks
- D roughage

21 Why is it necessary to clean and maintain water installations?

- A to encourage algae to grow
- B to ensure proper working
- C to prevent contaminated water
- D to prevent dirt entering the water

22 Which of the following is a result of the impact of HIV and AIDS on food production?

- A drop in household income
- B export increase
- C decline in food production
- D loss of family support

23 Where in the male reproductive system are sperm cells produced?

- A epididymis
- B scrotum
- C sperm duct
- D testis

24 Which one is an inorganic source of nitrogen and potassium?

	nitrogen	potassium
A	ammonium nitrate	urea
B	LAN	muriate of potash
C	LAN	superphosphates
D	NPK	urea

- 25** Which source of water would likely stunt the growth of plants?
- A** lake water
  - B** ocean water
  - C** river water
  - D** well water
- 26** An area specially planted with a grass species with a high food value is called
- A** fodder.
  - B** grassland.
  - C** pasture.
  - D** vegetation.
- 27** Which of the following practices is a method of controlling bush encroachment?
- A** burn throughout the year
  - B** keep grazers and browsers together
  - C** practice of continuous grazing
  - D** practice of selective grazing
- 28** Which plant must be present in a crop rotation system?
- A** bean
  - B** cabbage
  - C** carrot
  - D** potato
- 29** What is the first step in land reclamation?
- A** clearing
  - B** fertilising
  - C** levelling
  - D** planting
- 30** Which component is improved by removing excess water from the soil?
- A** air
  - B** gravel
  - C** microorganisms
  - D** organic matter

- 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.

**1 GENERAL AGRICULTURE: COMPULSORY**

(a) Table 1.1 shows some of the food Namibia imports from other countries.

**Table 1.1**

<b>food</b>	<b>country where it is produced</b>
vegetables	South Africa
grains (e.g. rice)	Zimbabwe

(i) Explain why Namibia imports food from other countries.

.....  
.....  
.....  
.....

[2]

(ii) Suggest **three** ways in which Namibia can increase food production to reduce the import of food.

1 .....

2 .....

3 .....

.....

[3]

(b) Commercial and subsistence farming are the two farming systems commonly practised in Namibia.

(i) Which farming system is commonly practised in the far northern part of Namibia?

.....

[1]



(ii) Describe the differences between commercial and subsistence farming based on the productivity and tools used.

Productivity - subsistence .....

Productivity - commercial .....

Tools used - subsistence .....

Tools used - commercial ..... [2]

(c) Explain how a farmer can reclaim the following areas for agricultural purposes.

(i) Eroded areas.....

..... [1]

(ii) Waterlogged areas.....

..... [1]

(d) Mention **two** negative effects of strong wind on the environment.

1 .....

2 ..... [2]

(e) What practise can be followed by farmers to reduce the effects of high temperatures on plant growth?

..... [1]

(f) Describe and explain what will happen to the rate of transpiration when humidity is high.

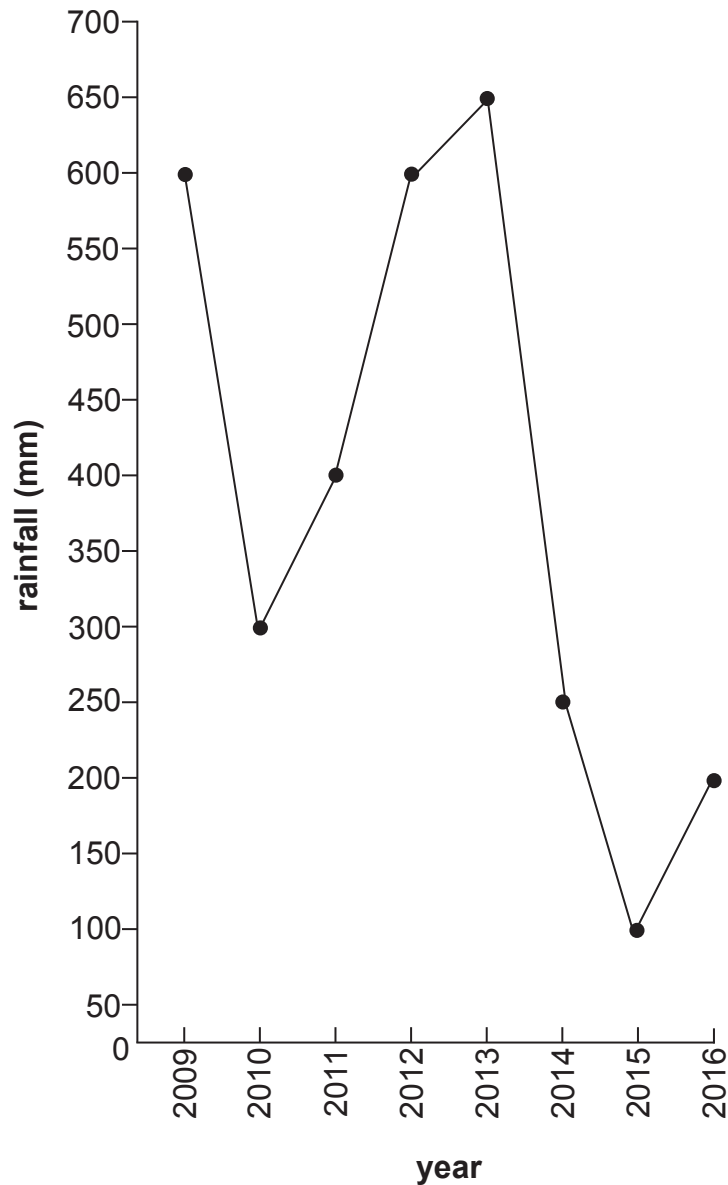
Description .....

Explanation .....

.....

..... [2]

(g) Fig. 1.2 shows the rainfall pattern in Namibia over a period of time.



**Fig 1.2**

(i) Give the total amount of rainfall shown in the graph.

..... [1]

(ii) Calculate the average rainfall from 2009 up to 2016.

..... [1]

(iii) Which years received the same amount of rainfall?

..... [2]

(iv) What is the difference in rainfall between 2010 and 2013?

..... [1]

**[20]**

**2 SOIL: COMPULSORY**

(a) Table 2.1 shows the main characteristics of soil.

**Table 2.1**

soil types			
characteristic	sand	loam	clay
water retention	(i) .....	good	very good
cultivation	very easy	fairly easy	(ii).....
fertility	low	fairly high	(iii).....

(i) Complete Table 2.1. [3]

(b) (i) Which soil type is most suitable for growing crops?  
..... [1]

(ii) Apart from the characteristics mentioned in Table 2.1, outline **one other** characteristic of sand soil.  
..... [1]  
.....

(c) A farmer decided to plant maize and beans in a plot. She used superphosphate, kraal manure and limestone ammonium nitrate to improve the soil fertility of the plot.

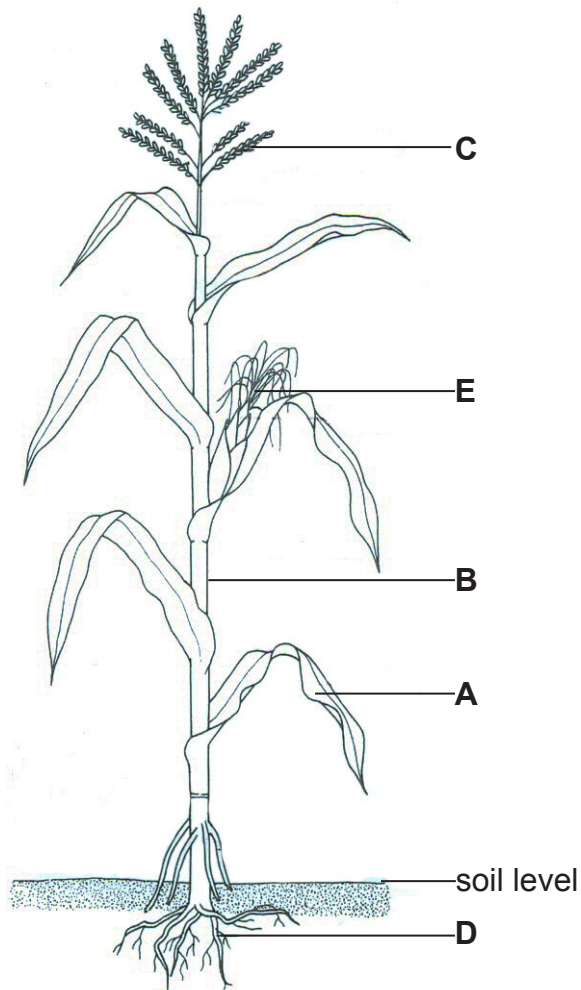
(i) Identify from the above-mentioned fertilisers the inorganic source of nitrogen and phosphorus.  
nitrogen .....  
phosphorus ..... [2]

(ii) Identify the organic source of phosphorus the farmer used.  
..... [1]

(iii) Why did the farmer plant maize with beans in the same plot?  
..... [1]  
.....

(iv) Name **two** appearances of maize if the plot lacks nitrogen.  
1 ..... [2]  
.....  
2 .....  
.....

(d) Fig. 2.1 shows a healthy plant.



**Fig. 2.1**

(i) Which structure of the plant would benefit most from the addition of potassium?

..... [1]

(ii) Which nutrient would most benefit structure D?

..... [1]

(iii) Which macro plant nutrient is responsible for the green colour in the plant's leaves?

..... [1]

(iv) State the function of calcium in plants.

..... [1]  
.....

**[15]**

**3 GRAZING AND VELD MANAGEMENT: COMPULSORY**

(a) Column **A** shows characteristics of different types of veld and grasses. Column **B** shows different types of veld and grasses.

column A	column B
1. has rhizomes	A sweet veld
2. found in acidic soil	B annual grass
3. has many seeds and flowers	C sour veld
4. pale to whitish in winter	D perennial grass

Match column **A** with column **B**. Only write **A, B, C** or **D** on the corresponding answer lines.

1 .....

2 .....

3 .....

4 .....

[4]

(b) Explain how overgrazing can cause bush encroachment.

.....

.....

.....

.....

[2]

(c) Explain how the following factors influence the carrying capacity of the land.

(i) high rainfall

.....

.....

[2]

(ii) soil erosion

.....

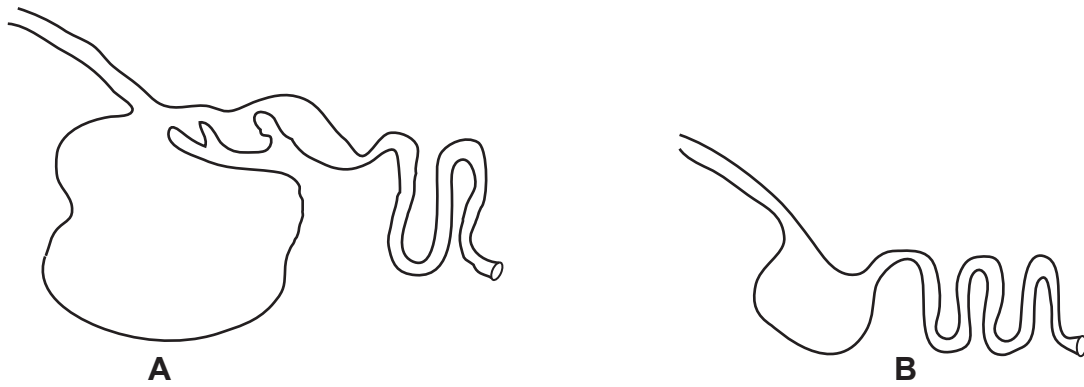
.....

[2]

[10]

**4 GENERAL PRINCIPLES OF ANIMAL PRODUCTION: COMPULSORY**

(a) Fig. 4.1 shows the digestive systems of two types of farm animals.



**Fig. 4.1**

(i) Identify, with a reason, which type of digestive system **B** is.

Type of digestive system.....

Reason.....

..... [2]

(ii) In which part of the digestive system does the absorption of nutrients take place?

..... [1]

(b) Describe **two** reasons why animals should be fed a balanced diet.

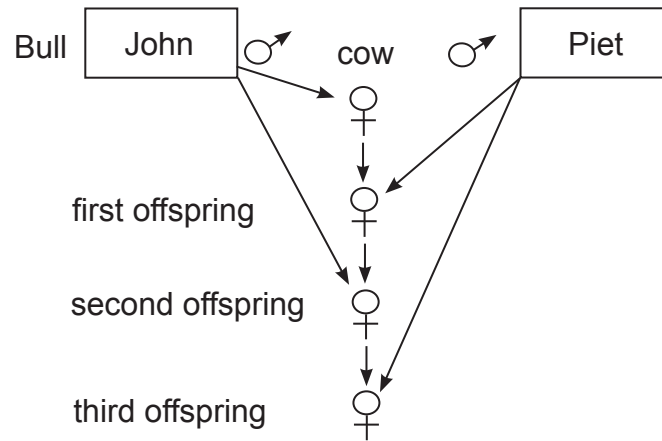
1 .....

.....

2 .....

..... [2]

(c) Fig 4.2 shows a breeding system.



**Fig. 4.2**

Identify and describe the breeding system shown in Fig. 4.2.

Identification of breeding system.....

Description .....

..... [2]

(d) (i) Foot-and-mouth disease, Anthrax, Rinderpest and Newcastle disease are all diseases which need to be communicated to veterinary offices, once noticed. If not, it may cause a great loss to farmers. What name is given to these types of diseases?

..... [1]

(ii) Name the causative organism of Anthrax.

..... [1]

(iii) State **one** symptom that shows that an animal has died from Anthrax.

..... [1]  
.....

**[10]**

**5 COMMUNITY-BASED NATURAL RESOURCE MANAGEMENT: COMPULSORY**

(a) Fig. 5.1 shows a well-managed forest.



**Fig. 5.1**

Explain the benefits a community can obtain from a well-managed forest.

.....

.....

.....

.....

.....

.....

[3]

(b) Fig. 5.2 shows some products which the community can sell to tourists to get an income.



**Fig. 5.2**

List **three other** ways in which a community can generate income from tourism.

1 .....

2 .....

3 .....

[3]



- (c) (i) Over a period of 25 years the income from conservancies was N\$ 6 575 000 and that of the community forest was N\$ 4 075 000. Calculate the total income that was received over the 25 years.

.....  
.....

[1]

- (ii) How much did each natural resource earn on average per year?

Conservancies .....

.....

Community forest .....

.....

[2]

- (iii) How much more per year did the conservancies receive?

.....  
.....

[1]

- (d) In a table form, compare the differences between conservancies and wild life councils based on (i) the area covered and (ii) the management of income.

conservancies	wild life council
area	
(i).....	.....
.....	.....
management of income	
(ii).....	.....
.....	.....

[2]

- (e) Conservancies are managed by local communities in Namibia. However, they should be legally established.

Outline **three** government conditions of acceptance for conservancies.

1 .....

.....

2 .....

.....

3 .....

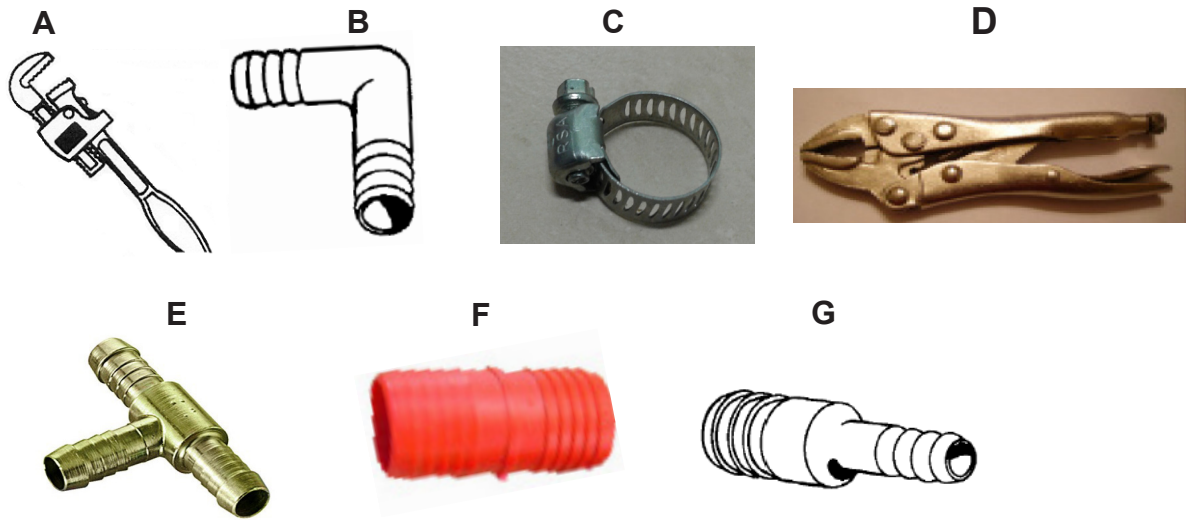
.....

[3]

[15]

**6 FARMING TECHNOLOGY - WATER SUPPLY: COMPULSORY**

(a) Fig. 6.1 shows some tools and fittings used in water installations.



**Fig. 6.1**

- (i) Identify the pipe nipple in Fig. 6.1.  
 ..... [1]
- (ii) Explain the use of tool **D**.  
 ..... [1]
- (iii) State the functions of fittings **E** and **G**.  
**E**.....  
 .....  
**G**.....  
 ..... [2]
- (iv) Identify fitting **G**.  
 ..... [1]
- (v) Identify fitting **C**.  
 ..... [1]
- (vi) Explain why fitting **C** is used when connections in water installations are done.  
 .....  
 ..... [1]

(b) Fig. 6.2 shows two water pumps used for supplying water to farmers.

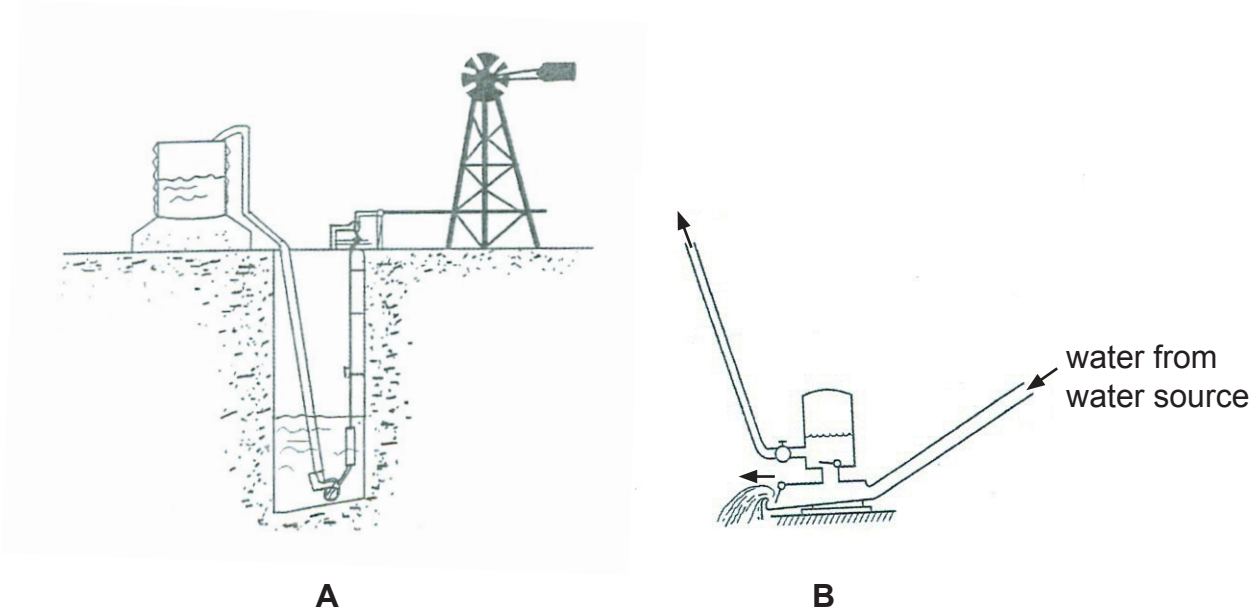


Fig. 6.2

(i) Identify pumps A and B.

A.....

B..... [2]

(ii) Name the part found in pumps that prevents the back flow of water.

..... [1]

[10]

**CHOOSE EITHER QUESTION 7 OR QUESTION 8**

**7 TREE GROWING**

(a) The bar graph shows the number of animal species in an environment before and after deforestation.



Identify the effect of deforestation on animal species as shown by the bar graph.

..... [1]

(b) The headman of Tsumkwe is complaining about the people/community who are burning grass, trees and forest resources in the area.

Explain why the Tsumkwe community members are burning the forest.

..... [2]

(c) Discuss the concepts/processes that can be carried out in tree growing.

(i) Pruning

..... [1]

(ii) Thinning

..... [1]

(d) Fig. 7.1 shows some advantages of trees.



**Fig. 7.1**

State **three** visible advantages of trees.

1 .....

2 .....

3 .....

[3]

(e) Suggest the best irrigation method for growing trees where there is very little water available.

.....

[1]

(f) Name an appropriate tool used for pruning.

.....

[1]

**[10]**

8 CEREAL CROPS

(a) A farmer in the southern part of Namibia selected and planted the maize cultivar **kalahari pearl** and the millet cultivar **okashana** in his garden.

Suggest why the farmer chose to plant these two cultivars.

.....  
.....  
.....  
.....

[2]

(b) Fig. 8.1 shows tools and implements used in farming.

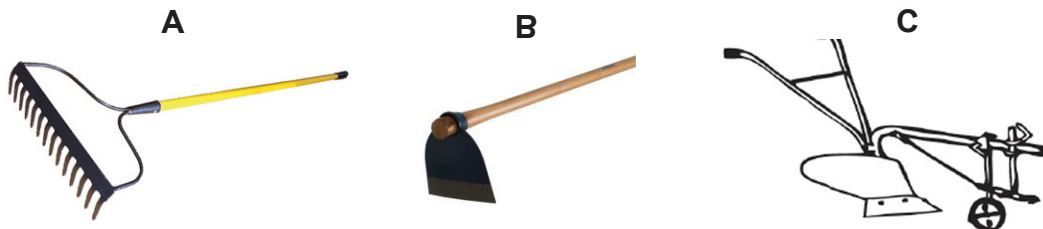


Fig. 8.1

State the functions of **A** and **C**.

**A**.....

**C**.....

[2]

(c) Explain **two** reasons why water availability should be considered when spacing a cereal crop during planting.

1 .....

.....

2 .....

.....

[2]

(d) What is the best time to plant cereal crops.

.....

[1]

(e) Fig. 8.2 shows two types of fertilisers used in agriculture.

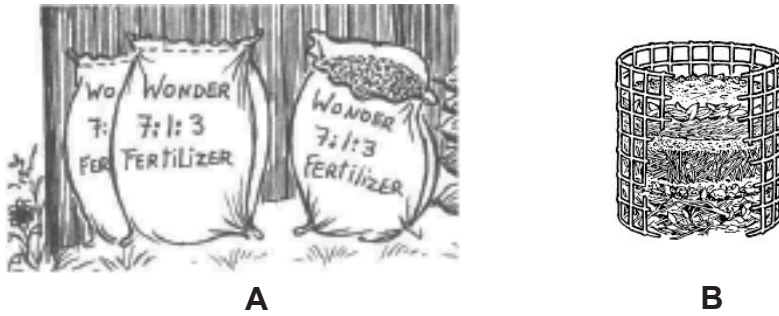


Fig. 8.2

(i) Explain the importance of using fertiliser B.

.....  
 .....

[1]

(ii) Which fertiliser will harbour pests and diseases?

.....

[1]

(f) To determine and evaluate the success of a maize farm, a farmer needs to keep records.

State **one** type of record kept on the farm.

.....

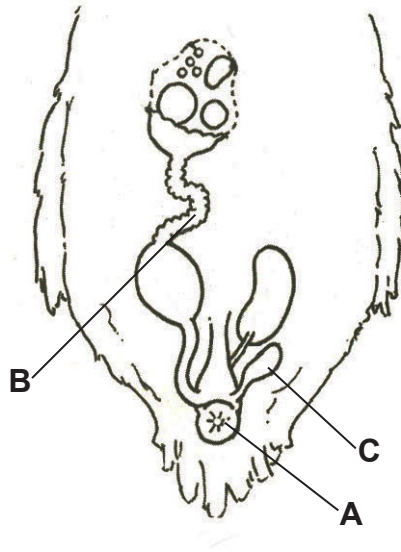
[1]

[10]

**CHOOSE EITHER QUESTION 9 OR QUESTION 10**

**9 OSTRICH FARMING**

(a) Fig. 9.1 shows a female reproductive system.



**Fig. 9.1**

Identify the parts labelled **A** and **B**.

**A**.....

**B**.....

[2]

(b) Draw an ostrich egg and label the chalaza and the yolk.

[3]



(c) State **two** reasons why intensive management of ostriches is the best system for a farmer to use.

1 .....

.....

2 .....

.....

[2]

(d) Apart from exporting, discuss another importance of the following ostrich products.

(i) skin

.....

.....

(ii) feathers

.....

.....

(iii) meat

.....

.....

[3]

[10]

**10 BEEF CATTLE**

- (a) The names of the different organs of the reproductive system of a bull and a cow are given.

**ovary    scrotum    bladder    penis    seminal vesicle**  
**vas deferens    testis    vagina    uterus**  
**cervix    urethra    oviduct    epididymis**

- (i) Arrange the organs in a chronological way to show the movement of a sperm cell from production until ejaculation. The first and last organ is given.

testis → .....

.....

..... → penis [2]

- (ii) State which organ produces the egg cell/ovum.

..... [1]

- (iii) Name the organ in which the foetus grows and develops.

..... [1]

- (iv) Which process is normally followed to prevent unwanted breeding?

..... [1]

- (b) Arrange the following phrases under the correct heading to distinguish between extensive and intensive management systems.

**small piece of land, animals graze freely, large piece of land, rotational grazing.**

extensive management system	intensive management system
1..... .....	1..... .....
2..... .....	2..... .....

[2]

(c) Fig. 10.1 shows a record system.

date	bulls	cows	calves	oxen	heifers	
5 June 2014	2	50	25			
	6	43	19			
	2	47	26			
				50		
				60		
					20	
					32	
					10	
total						grand total

**Fig. 10.1**

(i) Name the record system shown in Fig. 10.1.

..... [1]

(ii) Calculate the grand total of the number of animals shown on the record system in Fig. 10.1.

..... [2]

.....

**[10]**