Centre Number	Candidate Number	Candidate Name

NAMIBIA SENIOR SECONDARY CERTIFICATE

AGRICULTURE ORDINARY LEVEL

4321/2

PAPER 2

2 hours

Marks 100

2017

Additional Materials: Non-programmable calculator

INSTRUCTIONS AND INFORMATION TO CANDIDATES

- Candidates answer on the Question Paper in the spaces provided.
- Write your Centre Number, Candidate Number and Name in the spaces at the top of this page.
- Write in dark blue or black pen.
- You may use a soft pencil for any diagrams, graphs or rough working.
- Do not use correction fluid.
- You may use a non-programmable calculator.
- Do not write in the margin *For Examiner's Use*.

Section A

- Answer **all** questions.

Section B

- Answer any **two** questions.
- Write your answers on the answer sheets at the end of the booklet.

- The number of marks is given in brackets [ ] at the end of each question or part question.

For Examiner's Use	
Section A	
Section B	
Question	
Question	
Total	

Marker	
Checker	

This document consists of **18** printed pages and **2** blank pages.

Republic of Namibia

MINISTRY OF EDUCATION, ARTS AND CULTURE

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SECTION A

1 The diagram shows farmers reclaiming land.

(a) Define the term *land reclamation*.

.....

..... [1]

(b) Name the process of land reclamation shown in the diagram.

..... [1]

(c) List **three** processes that should follow after the process in the picture has been completed.

1 .....

2 .....

3 ..... [3]

(d) Explain how more food could be produced without reclaiming more land.

.....

.....

.....

.....

.....

..... [3]

[8]

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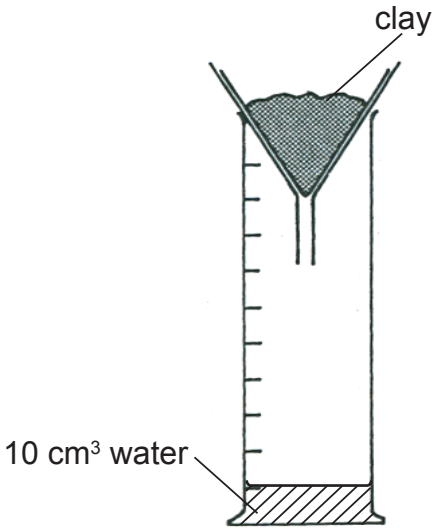
2 A funnel on top of a measuring cylinder was filled with 100 g dry clay soil and 50 cm^3 of water was added. It was allowed to drain for 15 minutes.

The result is shown in the diagram.



(a) Calculate the amount of water retained in the soil after 15 minutes.

.....

..... [2]

(b) Describe the water-holding capacity and drainage of clay soil.

.....

.....

.....

..... [2]

(c) Describe **three** effects of clay soil on plant growth.

1 .....

.....

2 .....

.....

3 .....

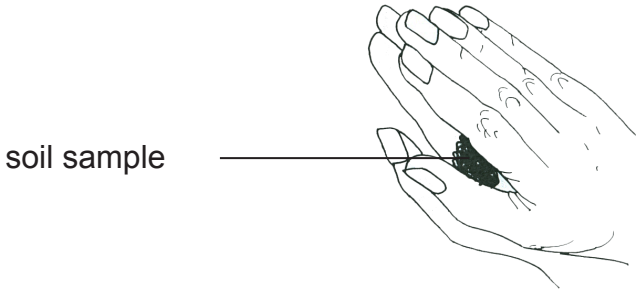
..... [3]

(d) Describe how clay soil can be made suitable for plant growth.

.....

..... [1]

(e) Some soil samples, when moist, can be rolled into the shape of a sausage. The diagram shows part of the procedure in a 'sausage test'.



(i) State the purpose of the 'sausage test'.

..... [1]

(ii) State a soil type which will **not** easily form a sausage shape and explain why.

soil type .....

explanation .....

.....

..... [2]

(f) Humus is a very important substance in the soil.

(i) Discuss **three** benefits for a farmer of having a large amount of humus in soil.

1 .....

.....

2 .....

.....

3 .....

..... [3]

(ii) Suggest **two** ways humus can be added to a soil.

1 .....

2 ..... [2]

[16]

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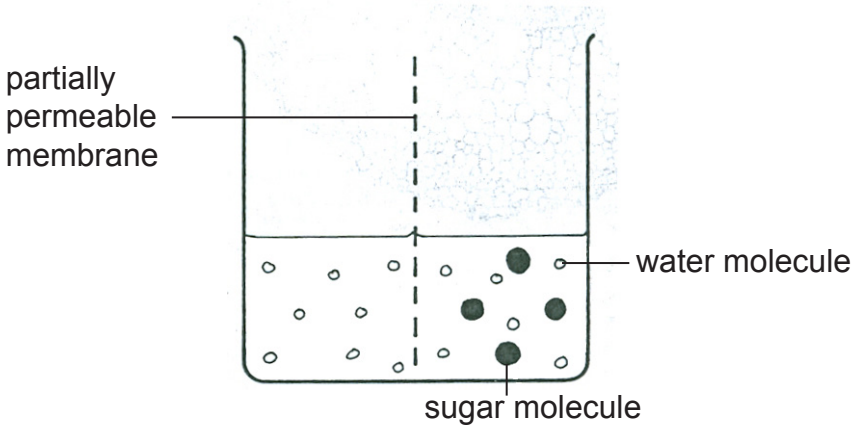
3 The diagram can be used to explain osmosis.



(a) Define the term *osmosis.*

.....

.....

.....

..... [2]

(b) Draw an arrow on the diagram to show the direction of osmosis. [1]

(c) State **two** reasons osmosis is important to plants.

1 .....

.....

2 .....

..... [2]

(d) A plant cell is placed in a solution that will result in water leaving the cell.

Explain what will happen to this cell if left in this solution for 30 minutes.

.....

.....

.....

..... [2]

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(e) Name a process in which plants

(i) use sunlight,

..... [1]

(ii) release energy from sugars,

..... [1]

(iii) release water vapour.

..... [1]

[10]

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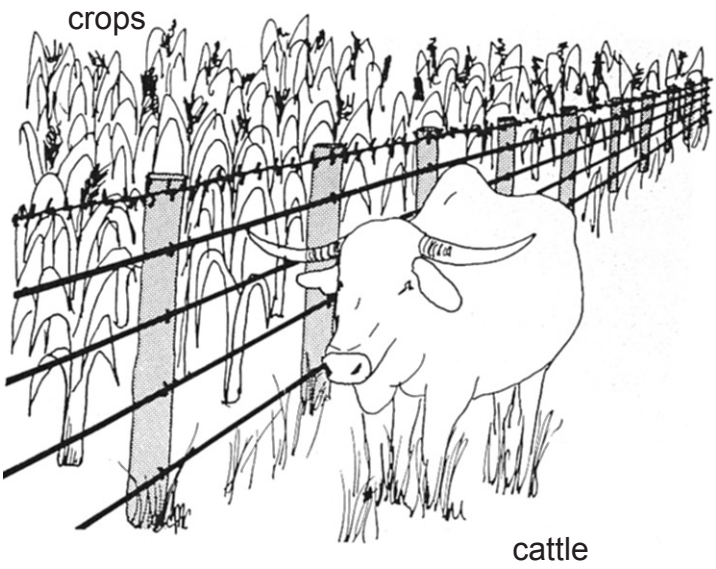
4 The diagram shows a fence separating cattle from crops.



(a) Name the farming system where plants and animals are kept on one farm.

..... [1]

(b) Discuss the benefit of such a system to

(i) a farmer,

.....

.....

.....

..... [2]

(ii) animals.

.....

..... [1]

(c) Keeping animals in an enclosed area allows rotational grazing.

Discuss **three** benefits of a rotational grazing system.

1 .....

.....

2 .....

.....

3 .....

..... [3]

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(d) Describe **three** characteristics of the type of fence that is suitable to enclose large animals.

1 .....

.....

2 .....

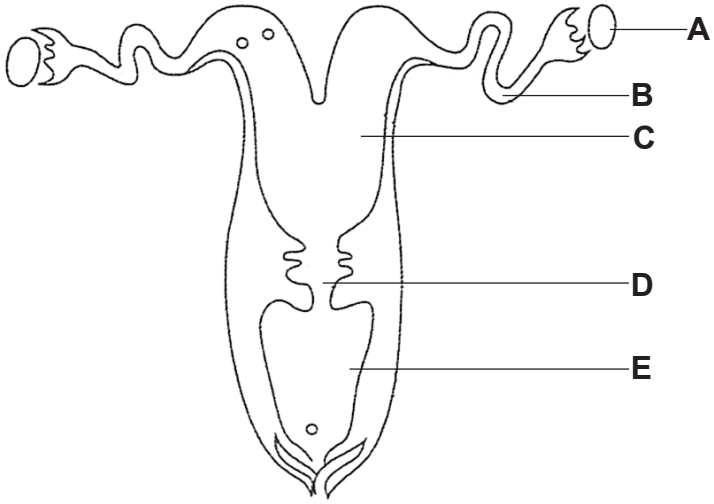
.....

3 .....

..... [3]

[10]

5 The diagram shows the female reproductive system of an animal.



(a) Identify the parts labelled **A**, **C** and **D**.

A .....

C .....

D ..... [3]

(b) Write down the letter of the part in the diagram that

(i) is the site of fertilisation,

..... [1]

(ii) receives semen during artificial insemination,

..... [1]

(iii) allows sperm to enter the uterus.

..... [1]

(c) Outline the importance of the hormones oestrogen and progesterone in female animals.

Oestrogen .....

.....

Progesterone .....

..... [2]

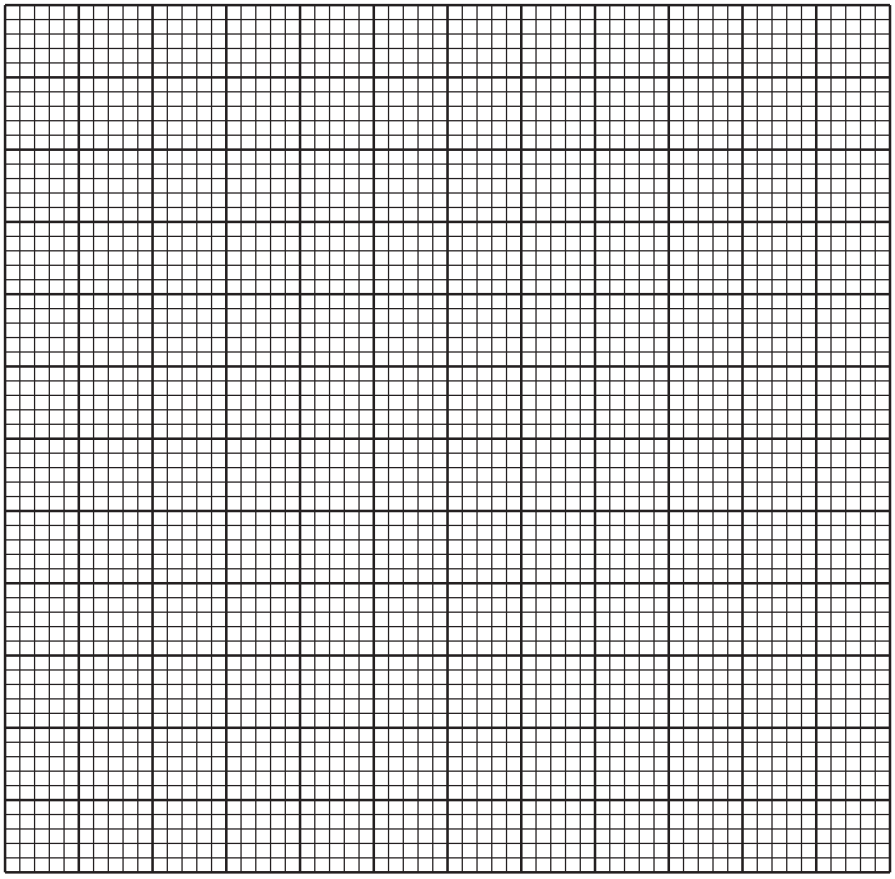
[8]

6 The farmer feeds broilers and observes the body mass of each over time.

The table shows the growth of one broiler weighed at different ages.

age / weeks	1	2	4	6	8	10	12
body mass / (kg)	1.5	1.75	2.5	3.0	4.0	4.5	4.0

(a) Draw a line graph to show the growth of the broiler over the period, from 1 to 12 weeks of age.



[4]

(b) State the age at which the broiler should be slaughtered.
Give a reason to justify your answer.

Age.....

Reason.....

.....

..... [2]

(c) Between which ages was the greatest gain in body mass in a 2-week period?

..... [1]

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(d) Suggest **one** factor, **other than** food that could reduce the weight of broilers.

.....

..... [1]

[8]

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7 The following are questions that are asked by farmers when they draft farm marketing and financial plans.

(a) State which **three** of the questions, **A** to **F**, need to be considered for the financial plan.

..... [3]

(b) State **two** factors of production in agricultural economics.

1 .....

2 ..... [2]

(c) The table shows the economic performance of a poultry farm.

number of broilers: 55
age: 12 weeks
cost of feed: N$ 320 per week
income from broiler sales: N$85 each

(i) State **two** other costs to the farmer to raise the broilers.

1 .....

2 ..... [2]

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(ii) Calculate the profit made by the farmer from the sale of all broilers.

[2]

(iii) Suggest **one** factor other than demand and supply that could influence the price of the broilers.

..... [1]

[10]

SECTION B

Answer any **two** questions.

Write your answers on the answer sheets provided at the end of the booklet.
Use labelled or annotated diagrams where they can help to make your answers more understandable.

8 **(a)** Describe what is meant by the term *soil erosion*, what causes it, and how can it be prevented. [6]

(b) Explain how biological and physical weathering contribute to soil formation. [6]

(c) Describe the major functions of NPK fertilisers. [3]

[15]

9 **(a)** Describe the functions of the **four** digestive chambers of a ruminant. [8]

(b) Discuss the importance of each of the following to a farm animal

(i) a balanced ration, [3]

(ii) a production ration, [2]

(iii) a maintenance ration. [2]

[15]

10 **(a)** Describe how crops are grown organically. [5]

(b) Discuss the contribution of agriculture to the family, the national economy and world trade. [4]

(c) State **three** arguments in each case for and against genetically modified crop production. [6]

[15]

11 **(a)** Describe the characteristics of a crop cultivar that will grow well to produce a profitable harvest. [5]

(b) Describe **three** harmful effects of a **named** piercing and sucking crop pest. [3]

(c) Explain the precautions that should be taken when using farm chemicals. [7]

[15]

Answer Sheets for Section B

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