Centre Number	Candidate Number	Candidate Name

NAMIBIA SENIOR SECONDARY CERTIFICATE

AGRICULTURE ORDINARY LEVEL 4321/2

PAPER 2 2 hours

Marks 100 **2020**

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 **15** printed pages and **1** blank page.

Republic of Namibia

MINISTRY OF EDUCATION, ARTS AND CULTURE

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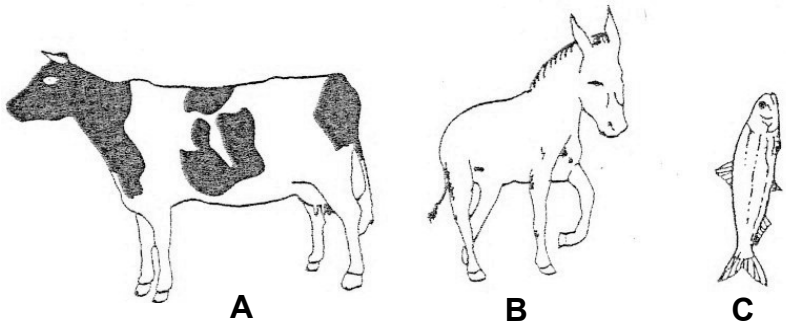
SECTION A

1 The diagrams show animals used by people.



A B C

(a) Apart from meat, state other uses of animals **A**, **B** and **C**.

A .....

B .....

C ..... [3]

(b) State the animal that contributes the most to the Namibian economy through export.

..... [1]

(c) Maize is used as a staple food for many Namibians. Discuss the suitability of maize to the Namibian climate.

.....

.....

..... [2]

(d) Explain the meaning of the term 'sustainable agriculture'.

.....

.....

.....

..... [2]

(e) Suggest ways of improving farming to cater for a growing population.

.....

.....

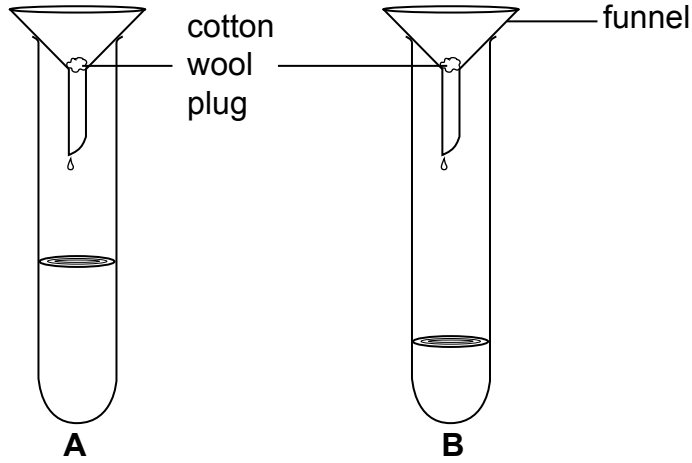
.....

.....

..... [3]

[11]

2 Equal amounts of sand and clay soil samples were placed separately in funnels. An amount of 50 cm^3 of water was then added to each sample and allowed to drain. The diagrams show the results of this soil water retention experiment.



(a) Which funnel contained

clay soil, ...

sandy soil? ..... [2]

(b) Give a reason for your answers in **(a)**.

.....

..... [1]

(c) State the soil

(i) that is well aerated.

..... [1]

(ii) that contains high nutrients.

..... [1]

(iii) that can easily be eroded.

..... [1]

(d) Explain how a farmer can improve the structure of clay soil.

.....

.....

..... [2]

(e) Suggest ways of improving drainage in a waterlogged soil.

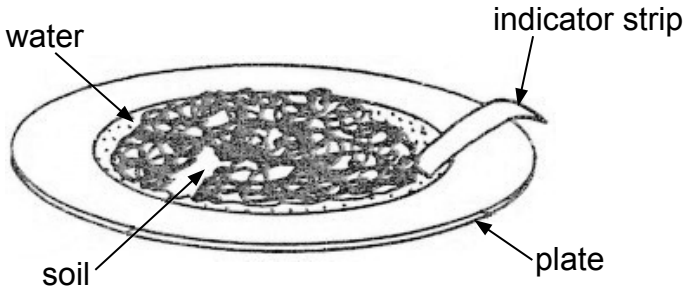
.....

.....

..... [2]

[10]

3 The diagram shows one way of testing soil pH.



(a) Describe the procedure followed when testing pH, as indicated in the diagram.

.....

.....

.....

.....

.....

..... [3]

(b) Explain the importance of pH testing to a farmer.

.....

.....

.....

..... [2]

(c) Describe how low pH can be improved.

.....

..... [1]

(d) Suggest **two** farming activities that can affect pH.

.....

.....

.....

..... [2]

(e) Discuss how pH can affect plant growth.

.....

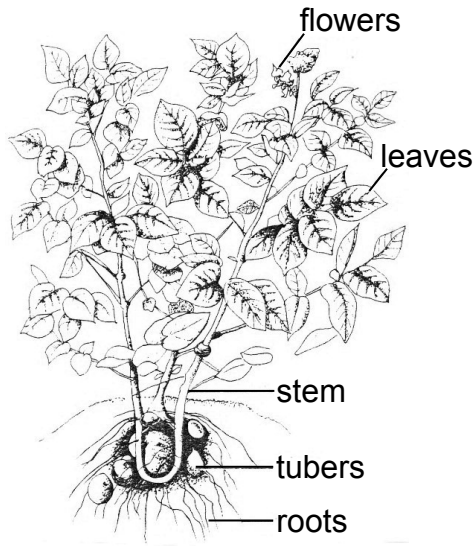
.....

.....

..... [3]

[11]

4 The diagram shows an Irish potato plant.



(a) Name the main substance that is stored in tubers.

..... [1]

(b) Describe how Irish potatoes reproduce asexually.

.....

.....

.....

.....

.....

..... [3]

(c) Irish potatoes are pollinated by insects. State three features of insect pollinated flowers.

.....

.....

.....

.....

.....

..... [3]

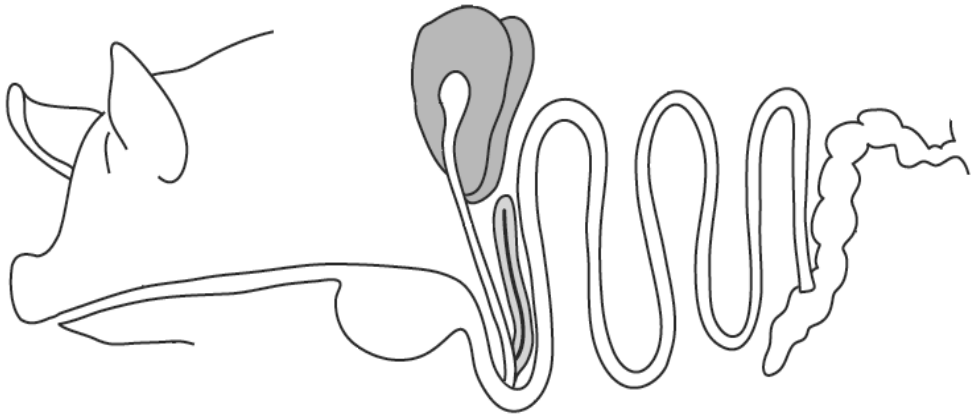
(d) Suggest why the Irish potato plant may be susceptible to high temperatures.

.....

..... [1]

[8]

5 The diagram shows a digestive system of a pig.



(a) **(i)** State whether a pig is a ruminant or a non-ruminant.

..... [1]

(ii) Use the diagram to give a reason for your answer.

..... [1]

(b) Label on the diagram with

(i) **E**, where enzymes are most active. [1]

(ii) **W**, where large amount of water is absorbed. [1]

(c) Explain the significance of enzymes in the absorption of nutrients in the digestive system of farm animals.

.....

..... [2]

(d) Explain the benefits of a balanced ration to animals.

.....

.....

.....

.....

..... [3]

(e) Outline how the small intestine is adapted to absorb digested food.

.....

.....

.....

..... [2]

[11]

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6 The table below indicates the reproduction record of a cow.

Breed	Insemination date	Expected calving date
Friesian	01 February 2019	

(a) Predict the expected calving date for the cow and write it in the table. [1]

(b) State **two** other records that should be kept for this cow.

.....

.....

.....

..... [2]

(c) State the importance of keeping farm records.

.....

.....

.....

..... [2]

(d) The total expenses for keeping this cow for one year is estimated at N$ 25 000.00 while the estimated returns are N$ 45 000.00.

(i) Calculate the profit expected from this cow.

.....

.....

.....

..... [2]

(ii) Suggest **one** main expense and **one** main source of income for a farmer farming with this cow.

.....

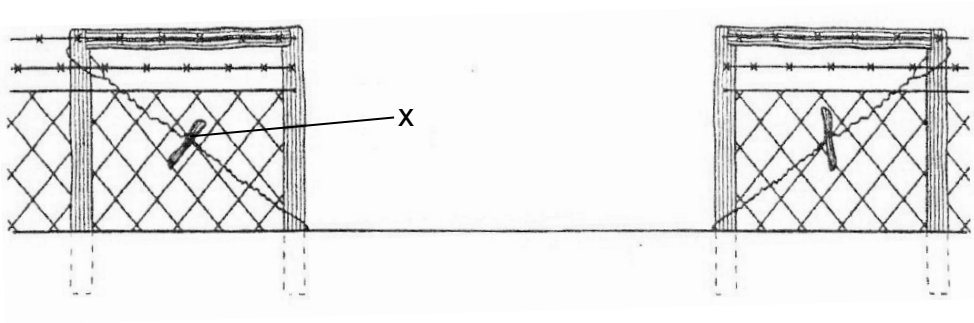
.....

.....

..... [2]

[9]

7 The diagram shows a fence for enclosing farm animals.



(a) State the type of fence shown in the diagram.

..... [1]

(b) State **one** main benefit of using this type of fence.

.....

..... [1]

(c) What is the purpose of structure X?

.....

..... [1]

(d) Describe the features of a gate that should be fitted in the fence to ensure large stock are enclosed.

.....

.....

.....

.....

.....

..... [3]

(e) Explain how wooden poles can be treated to last longer.

.....

..... [1]

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(f) Discuss the advantages of keeping animals in an enclosed area.

.....

.....

.....

.....

.....

..... [3]

[10]

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SECTION B

Answer any **two** questions.

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

8 **(a)** Describe the water cycle. [7]

(b) Explain how windy conditions and high humidity can benefit plants. [4]

(c) Discuss transpiration in terms of the upward movement of water through the plant. [4]

[15]

9 **(a)** Use a diagram to explain how nitrogen is recycled to benefit crops. [6]

(b) **(i)** Discuss the functions of nitrogen, phosphorus and potassium and their organic sources. [5]

(ii) Suggest why a farmer in a remote part of Namibia might choose to use organic fertilisers. [4]

[15]

10 **(a)** What is meant by an allele and a chromosome? [4]

(b) In a breed of goats, the characteristic of long hair is dominant over short hair. Construct a genetic diagram to show what offspring of heterozygous long haired parents will look like. [5]

(c) Discuss the consequences of practising genetic engineering in livestock breeding. [6]

[15]

11 **(a)** Describe the nature of damage caused by chewing and biting, piercing and sucking and boring pests, giving **one** example of each. [6]

(b) Suggest three reasons why the damage by pests would reduce plant growth. [3]

(c) Discuss the use of chemical, biological and cultural control of pests including their benefits. [6]

[15]

Answer Sheets for Section B

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