Centre Number	Candidate Number	Candidate Name

NAMIBIA SENIOR SECONDARY CERTIFICATE

BIOLOGY ORDINARY LEVEL

4322/3

PAPER 3 Applied Practical Skills

2 hours

Marks 60

2019

Additional Material: Ruler

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*.

- Answer **all** questions.

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

ORDINARY LEVEL

For Examiner's Use	
1	
2	
3	
4	
5	
Total	

Marker	
Checker	

This document consists of **11** printed pages and **1** blank page.

Republic of Namibia

MINISTRY OF EDUCATION, ARTS AND CULTURE

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For Examiner's Use

1 Fig. 1.1 shows an experiment to demonstrate that photosynthesis occurs in plants in the presence of light.

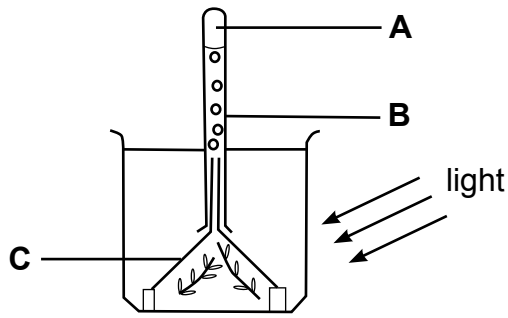


Fig. 1.1

(a) Identify the pieces of apparatus **B** and **C**.

B.....

C ..... [2]

(b) Name the gas that must be present in the water for photosynthesis to occur.

..... [1]

(c) Explain why the following parts of the apparatus were set up.

(i) the test-tube was filled with water

.....

..... [1]

(ii) the inverted funnel was placed on support

.....

..... [1]

(d) Suggest which gas you will expect to find at **A**.

..... [1]

(e) Name a plant suitable to be used in this investigation.

..... [1]

(f) Describe and explain how the control in this investigation will differ from the experiment.

.....

..... [2]

(g) Describe **three** ways in which photosynthesis is important for living organisms.

1 .....

.....

2 .....

.....

3 .....

..... [3]

[12]

2 Fig. 2.1 shows two plant cells, cell **D** and cell **E**. One cell has been placed in a concentrated sucrose solution and the other cell in distilled water.

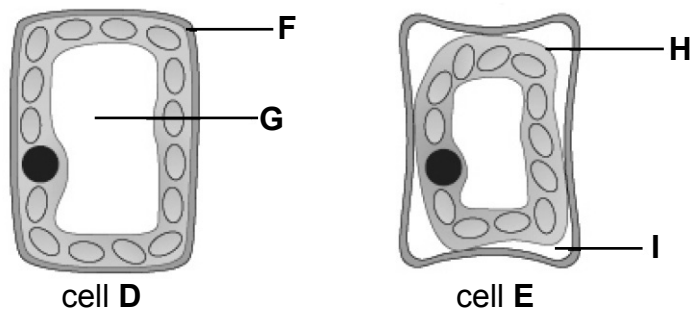


Fig. 2.1

(a) Identify the parts **F**, **G** and **H**.

F .....

G .....

H ..... [3]

(b) State which cell was placed in the sucrose solution and with reference to Fig. 2.1 give **three** reasons to support your answer.

Cell: .....

Reasons:

1 .....

.....

2 .....

.....

3 .....

..... [4]

(c) State which substance will be found in the part labelled **I** and give a reason for your answer.

Substance: .....

Reason: .....

..... [2]

(d) Explain the process which has resulted in the appearance of cell **D**.

.....

.....

.....

.....

..... [3]

[12]

3 Fig. 3.1 shows a fish.

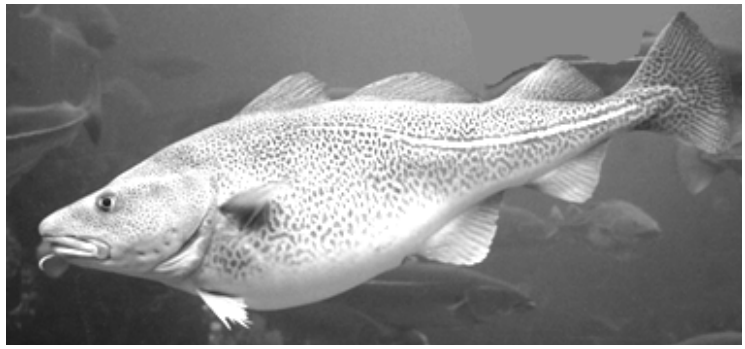


Fig. 3.1

(a) Make a large biological drawing of the fish in the box below. The length of your drawing should fill the box. Label **two** diagnostic features of the fish on your drawing.

[5]

(b) Calculate the magnification of your drawing. Show your working.

[3]

(c) Fig. 3.2 shows another fish.

Fig. 3.2

(i) Complete Table 3.1 to show **three** visible differences between the fish in Fig. 3.1 and the fish in Fig. 3.2.

Table 3.1

Fig. 3.1	Fig. 3.2
1.....	.....
2.....	.....
3.....	.....

[3]

(ii) Describe **one** similarity between the two fishes.

.....

..... [1]

[12]

4 The camel thorn tree is well-known in Namibia. It bears seed pods which contain seeds. Fig. 4.1 shows a pod.

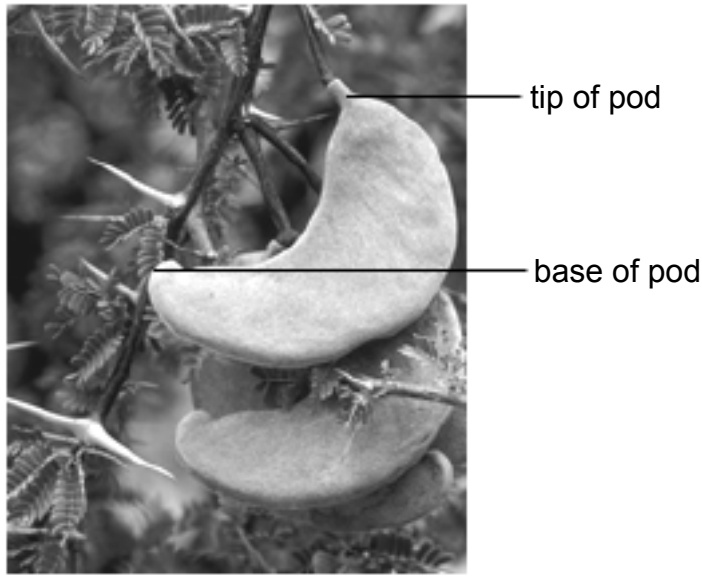


Fig. 4.1

50 pods were randomly selected and the length of each one was measured from the base to the tip. The results were recorded in Table 4.1.

Table 4.1

length of pod/mm									
25	29	28	27	28	23	28	23	26	28
29	28	29	29	28	29	29	30	29	29
30	31	30	29	32	41	30	29	30	32
33	35	34	32	36	32	34	32	33	35
40	39	38	37	39	35	38	36	37	39

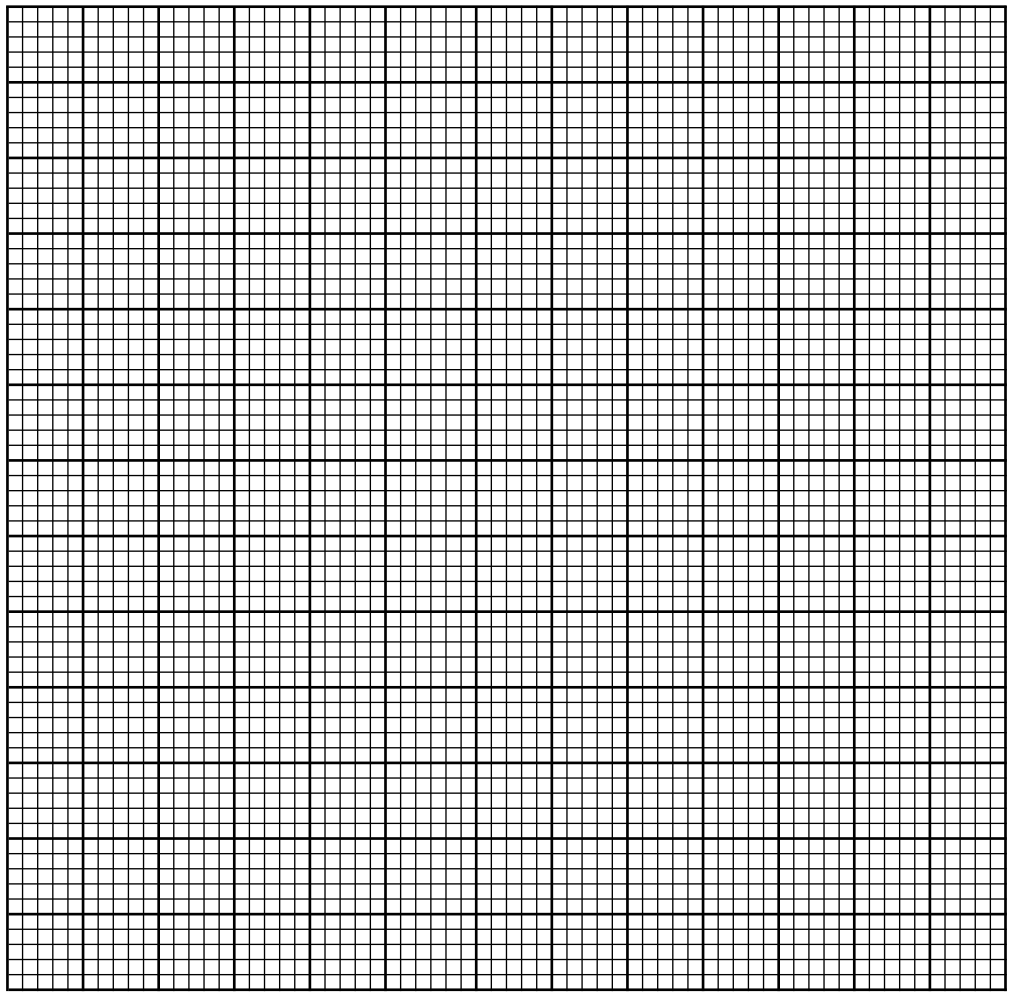
(a) (i) Organise the data in Table 4.2. The first row has been done for you.

Table 4.2

length/mm	tally	total
23-26	IIII	4
27-30		
31-34		
35-38		
39-42		

[3]

(ii) Plot the most suitable graph of the data in Table 4.2 using the graph paper provided.



[4]

(iii) State the type of variation shown by this data.

..... [1]

(b) The pods contain seeds and animals rely on these seeds for food.

Describe how these seeds can be tested for protein.

.....

.....

.....

.....

.....

.....

.....

..... [4]

[12]

5 Fig. 5.1 shows the change in dry mass from the time a seed starts to germinate until green leaves have appeared above the soil.

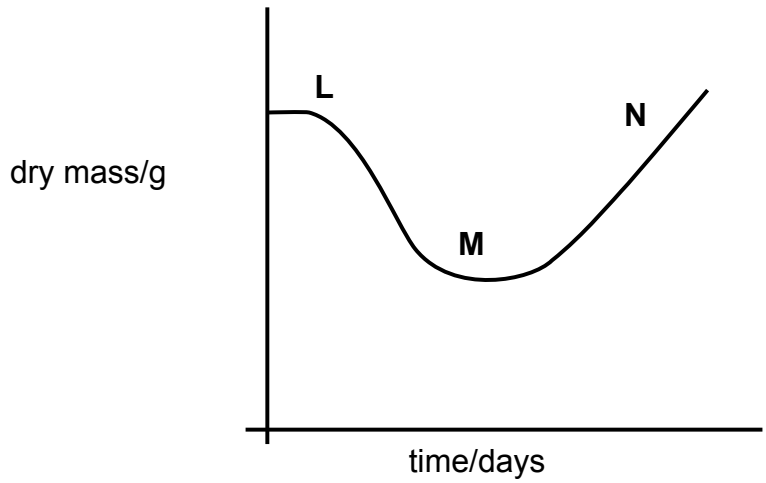


Fig. 5.1

(a) (i) State why dry mass is often used as a measure of growth.

.....

..... [1]

(ii) Describe how to determine the dry mass of the seeds from the time they start to germinate until green leaves have appeared above the soil.

.....

.....

.....

.....

.....

.....

.....

.....

.....

..... [5]

(b) Describe and explain what is happening between stages **L** and **M** and between **M** and **N**.

Between L and M

.....

.....

.....

.....

.....

Between M and N

.....

.....

.....

.....

..... [6]

[12]

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