Centre Number	Candidate Number	Candidate Name

NAMIBIA SENIOR SECONDARY CERTIFICATE

BIOLOGY ORDINARY LEVEL

4322/2

PAPER 2

2 hours

Marks 100

2017

Additional Materials: 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.

For Examiner's Use	
1	
2	
3	
4	
5	
6	
7	
8	
Total	

Marker	
Checker	

This document consists of **15** printed pages and **1** blank page.

Republic of Namibia

MINISTRY OF EDUCATION, ARTS AND CULTURE

For Examiner's Use

1 Fig. 1.1 shows three levels (**A** – **C**) in the classification of flowering plants.

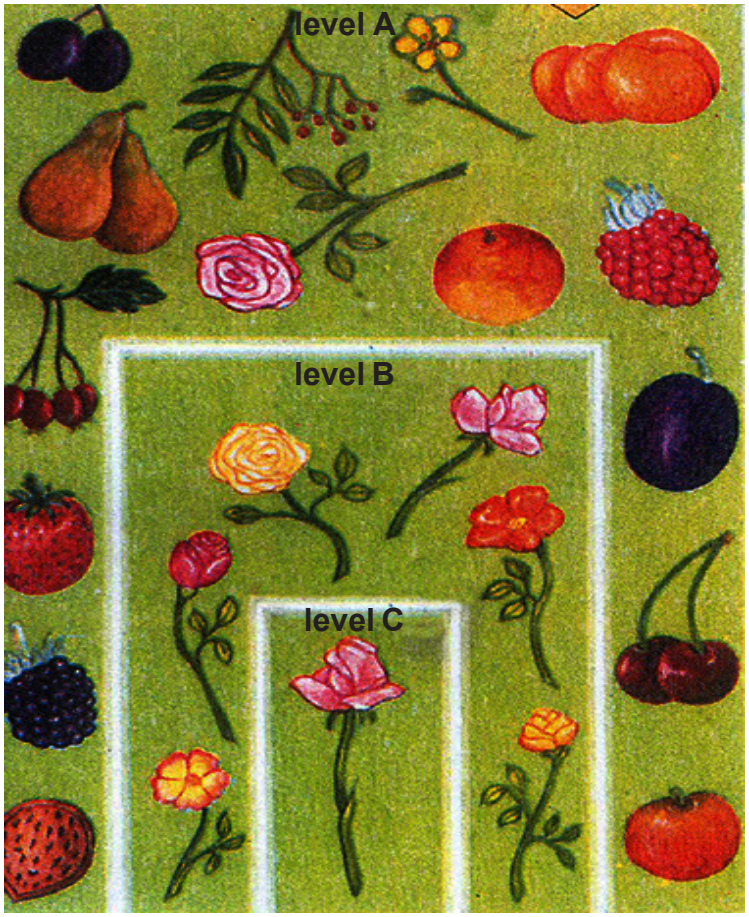

Fig. 1.1

(a) (i) Identify the level of classification indicated as level **A**.

..... [1]

(ii) Level **C** shows a species on Fig. 1.1.

Explain what is meant by the term species.

.....

.....

.....

..... [2]

(b) (i) With reference to the Latin name *Acacia erioloba*, state the meaning of the term binomial.

.....

.....

.....

..... [2]

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(ii) Fig. 1.2 shows four *Acacia* species occurring in Namibia.

Use the key to identify each tree and complete Table 1.1.

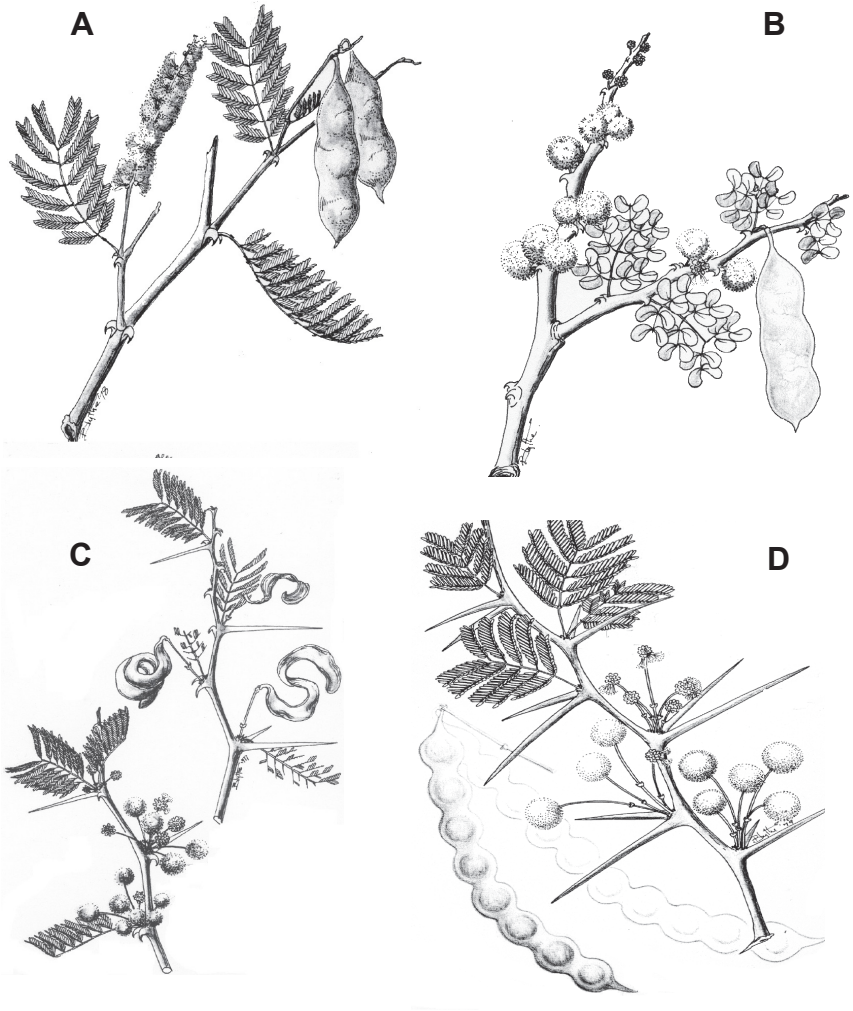

Fig. 1.2

1 flowers in a spike (elongated)..... *Acacia fleckii*
flowers in a round head ..... go to 2

2 only straight thorns..... *Acacia nilotica*
varied thorns hooked and or straight..... go to 3

3 pods linear ..... *Acacia hebeclada*
pods curled ..... *Acacia tortilis*

Table 1.1

	name of tree
A	
B	
C	
D	

[4]

(c) Fig. 1.3 shows an organism which belongs to the animal kingdom.

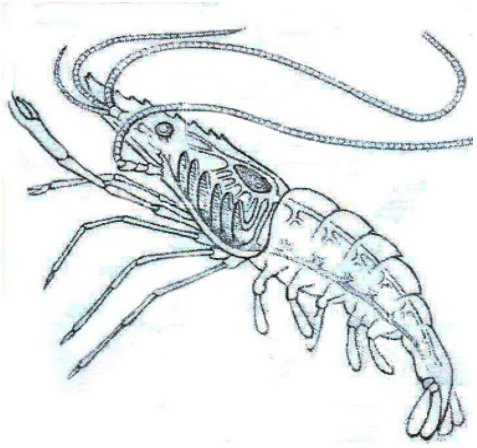

Fig. 1.3

(i) State the phylum the animal belongs to.

..... [1]

(ii) Give **two** reasons to support your answer in **(c) (i)**.

1 .....

.....

2 .....

..... [2]

(iii) The animal in Fig. 1.3 belongs to the class crustaceans.

Give **one** visible diagnostic feature of crustaceans.

.....

..... [1]

[13]

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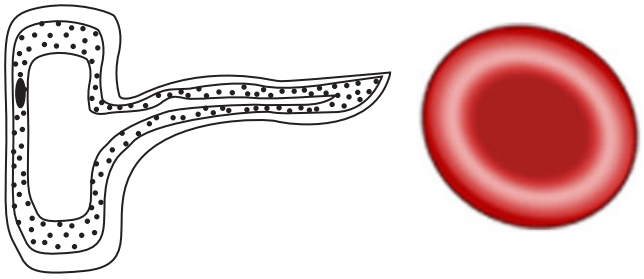
2 Fig. 2.1 shows two cells which play a role in transport in either plants or animals.



E **F**

Fig. 2.1

(a) (i) List **two** similarities between the cells.

1 .....

2 ..... [2]

(ii) Identify **two** differences between the cells.

1 .....

.....

2 .....

..... [2]

(b) (i) State the function of cell **E**.

.....

..... [1]

(ii) Explain how the shape of cell **E** enables it to carry out the function stated in **(b) (i)**.

.....

.....

.....

..... [2]

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(c) Cell **F** is placed in distilled water.

Explain what happens to the cell.

.....

.....

.....

..... [2]

(d) Cell **F** transports oxygen in the body.

By which process does oxygen enter the cell?

..... [1]

[10]

3 Table 3.1 shows some nutritional information about a food in a packet.

Table 3.1

nutrient	percentage
protein	13.0
carbohydrate	60.0
fat	6.3

(a) (i) List the basic units of fats and oils.

1 .....

2 ..... [2]

(b) Which nutrient is used for growth and repair?

..... [1]

(c) Which nutrient may include sugar?

..... [1]

(d) Calculate the percentage of nutrients not included in Table 3.1.

Show your working.

[1]

(e) Name the nutrient missing from Table 3.1 which is needed to prevent constipation.

Explain how this nutrient can help to avoid this condition.

Name .....

Explanation .....

..... [2]

(f) List **two** other requirements of a balanced diet other than those in Table 3.1 and your answer to **(e)**.

1 .....

2 ..... [2]

(g) Explain why the information in Table 3.1 does not represent a balanced diet.

.....

..... [1]

[10]

4 Fig. 4.1 is a side view of the human alimentary canal.

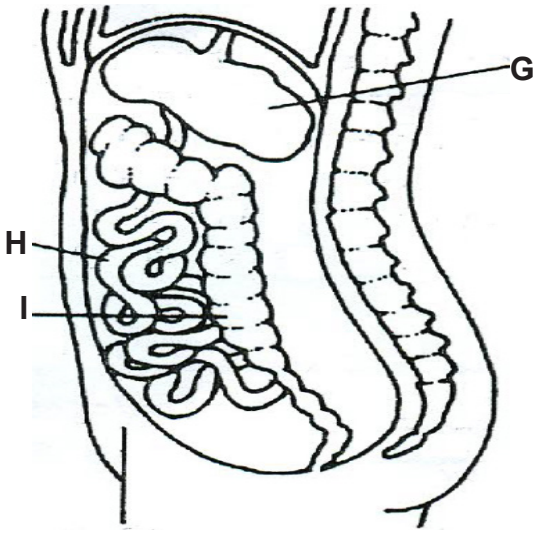

Fig. 4.1

(a) Draw in the position of the liver and label it as such. [1]

(b) (i) State the enzyme produced in the organ labelled **G**.

..... [1]

(ii) Which nutrient is digested in the organ labelled **G**?

..... [1]

(c) (i) Identify structures labelled **H** and **I**.

H.....

I ..... [2]

(ii) State the function of structure **I**.

.....

..... [1]

(iii) Name **one** structural feature of the part labelled **H** and explain how this structure is adapted for its function.

Name.....

Explanation .....

.....

..... [2]

(d) Fats are broken down into smaller fat globules in the alimentary canal.

Explain the importance of this process in the digestion of fats.

.....

.....

.....

..... [2]

(e) Table 4.1 shows some information about excretion in mammals.

Complete Table 4.1.

Table 4.1

excretory product	**organ that removes it from the body**	**reason for removing it or its importance to the body**
urea	.....	....
.....	lungs	....
.....	.....	acts as solvent in body/ medium for metabolic reactions

[6]

(f) Describe the role of the liver in excretion.

.....

.....

.....

..... [2]

[18]

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5 Fig. 5.1 shows a transverse section through part of a leaf.

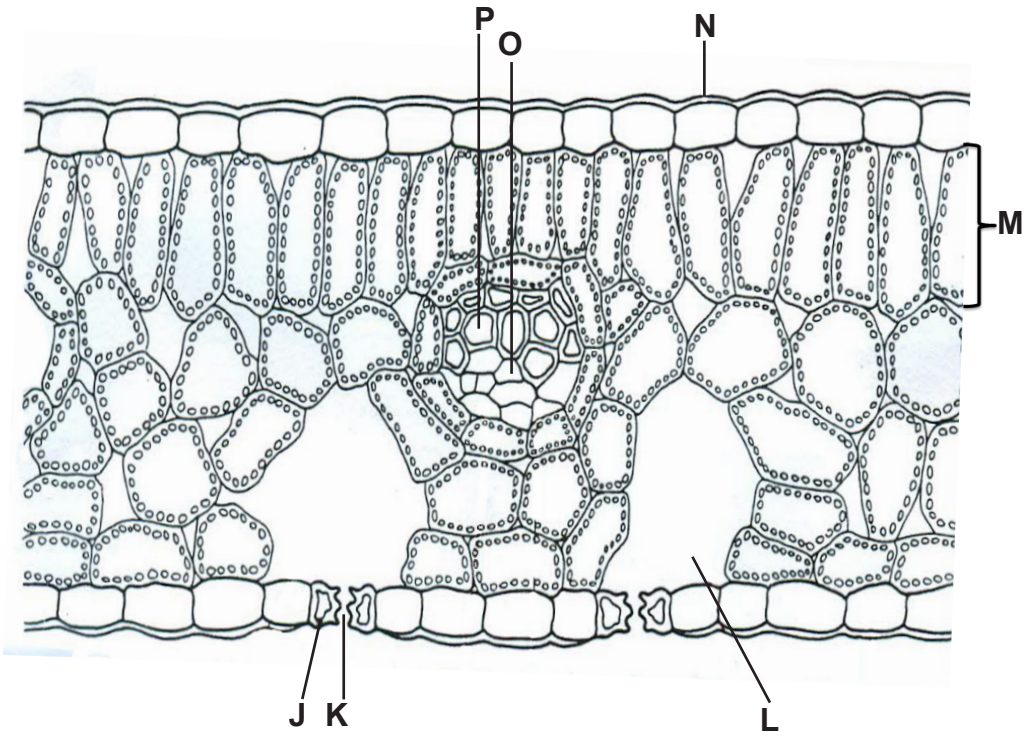

Fig. 5.1

(a) Label parts **J** - **M**.

J .....

K .....

L .....

M ..... [4]

(b) Name layer **N** and state its function.

N .....

Function .....

..... [2]

(c) Name **two** substances transported to the leaf cells by the part labelled **P**.

1 .....

2 ..... [2]

(d) Name **two** substances transported from the leaf cells by the part labelled **O**.

1 .....

2 ..... [2]

[10]

For Examiner's Use

6 Fig. 6.1 shows a longitudinal section of the heart.

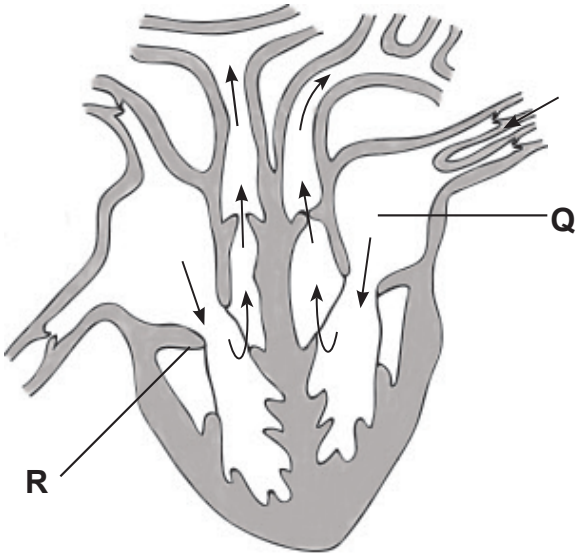

Fig. 6.1

(a) (i) Name chamber **Q** and valve **R**.

Q .....

R..... [2]

(ii) Which side of the heart pumps deoxygenated blood?

..... [1]

(iii) List **three** components of blood, **other than** red blood cells, and state the function of each component.

Name.....

Function .....

.....

Name.....

Function .....

.....

Name.....

Function .....

..... [6]

(b) The heart has valves that prevent backflow of blood.

Which type of blood vessels also have valves?

..... [1]

[10]

For Examiner's Use

7 Fig. 7.1 shows an animal cell about to divide by meiosis.

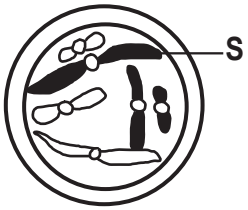

Fig. 7.1

(a) (i) State the diploid number of this cell.

..... [1]

(ii) Name **one** organ where these cells are made.

..... [1]

(b) (i) Name structure **S**.

..... [1]

(ii) State where structure **S** is found in a cell.

..... [1]

(c) Name the process by which the diploid number of structure **S** can be restored leading to the formation of a zygote.

..... [1]

(d) Explain the process by which a child with Down's syndrome may be born to parents who do not have the condition.

.....

.....

.....

..... [2]

For Examiner's Use

(e) Using only the words which appear in the list, complete the sentences by filling in the blank spaces.

allele

dominant

gamete

genotype

phenotype

recessive

When a genetic cross is made between a tall and short stemmed plant, both of which are homozygous, the resulting plants are all tall stemmed because the ..... for this characteristic is ..... .

They will all have the ..... Tt. [3]

(f) If one of these plants (Tt) was self-pollinated, what would be the ratio of tall stemmed plants to short stemmed plants.

Use a genetic diagram to explain your answer.

ratio.....[3]

[13]

8 **(a)** Identify the type of nutrition described below.

(i) a caterpillar eating a leaf

..... [1]

(ii) a leaf dies and falls to the ground where a fungus grows and feeds on it

..... [1]

(b) Explain why, despite not eating green plants, a lion relies on them for its food source.

You may use a food chain to help illustrate your answer.

.....

.....

.....

.....

.....

..... [3]

(c) Fig. 8.1 shows part of the water cycle.

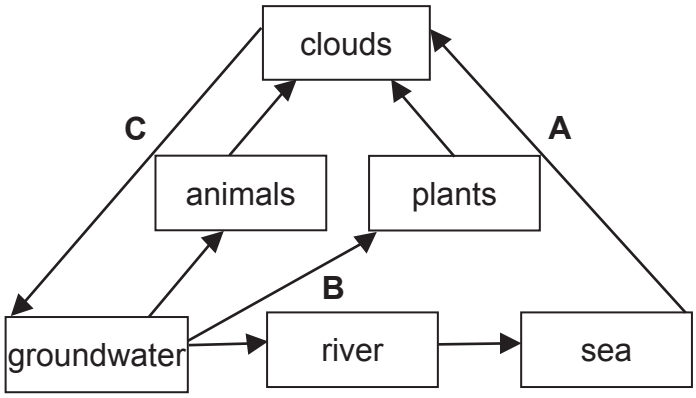

Fig. 8.1

(i) Name the processes represented by arrows **A** and **C**.

A.....

C..... [2]

(ii) If process **C** ceases for a long period of time, explain what effect this would have on the plants.

.....

.....

.....

..... [2]

(d) Water in rivers might become polluted.

State **two** human activities which may lead to water pollution.

1 .....

2 ..... [2]

(e) Pollution can be reduced and prevented through environmental conservation.

(i) Define the term *conservation*.

.....

.....

.....

..... [2]

(ii) Give **three** reasons why it is necessary to conserve water in Namibia.

1 .....

.....

2 .....

.....

3 .....

..... [3]

[16]

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