



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

CANDIDATE  
NAME

CENTRE  
NUMBER

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CANDIDATE  
NUMBER

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**BIOLOGY**

**0610/63**

Paper 6 Alternative to Practical

**May/June 2010**

**1 hour**

Candidates answer on the Question Paper

No Additional Materials are required.



**READ THESE INSTRUCTIONS FIRST**

Write your Centre number, candidate number and name on all the work you hand in.

Write in dark blue or black pen.

You may use a medium (HB) pencil for any diagrams or graphs.

Do not use staples, paper clips, highlighters, glue or correction fluid.

**DO NOT WRITE IN ANY BARCODES.**

Answer **all** questions.

At the end of the examination, fasten all your work securely together.

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

For Examiner's Use	
<b>1</b>	
<b>2</b>	
<b>3</b>	
<b>Total</b>	

This document consists of **12** printed pages.



1 A herbivore is an animal that gets its energy by eating plants.

A carnivore is an animal that gets its energy by eating other animals.

Fig. 1.1 shows the skulls with teeth of a sheep and of a dog.

sheep



dog



**Fig. 1.1**

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- (a) (i) Describe **one** similarity, related to nutrition, that you can observe between the teeth of the two skulls.

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

- (ii) Complete Table 1.1 to give **two** differences, related to nutrition, that you can observe between the teeth of the two skulls.

**Table 1.1**

	sheep	dog
difference 1		
difference 2		

[2]

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(b) Fig. 1.2 shows one 'back' tooth of the sheep and one 'back' tooth of a dog.



sheep



dog

Fig.1.2

(i) Make a large, labelled drawing of the 'back' tooth of the sheep.

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[3]

- (ii) Look carefully at the 'contact' surfaces of the tooth of the sheep and the tooth of the dog.

Complete the Table 1.2 to give **two** differences between the 'contact' surfaces of these teeth.

**Table 1.2**

herbivore - sheep	carnivore - dog

[2]

- (c) The nutrient content of green leaves and animal flesh are compared in Table 1.3.

**Table 1.3**

nutrient content / percentage of fresh mass			
	carbohydrate	protein	fat
green leaves	5 to 6	1 to 4	trace
animal flesh (meat)	trace	20	5 to 10

Using the data in Table 1.3, suggest why herbivores spend more time eating than carnivores.

.....  
 .....  
 ..... [2]

(d) Describe how you would safely test samples of green leaves and meat to find out which has more fat.

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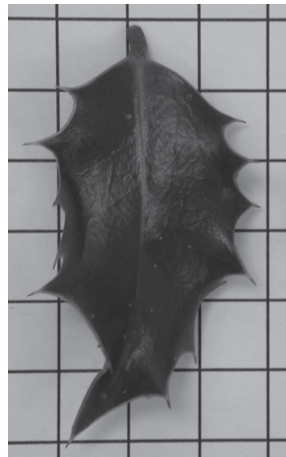
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..... [6]

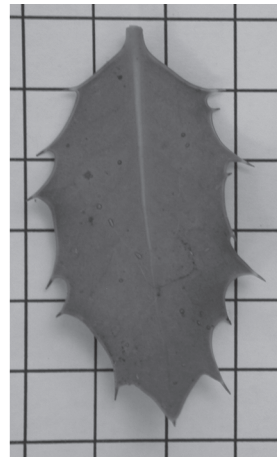
[Total: 16]

- 2 A number of leaves were removed from a holly tree *Ilex aquifolium*. Fig. 2.1 shows the upper and the lower surfaces of one leaf.

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upper surface



lower surface

Fig. 2.1

- (a) (i) Describe **one** way in which the appearance of the upper surface differs from that of the lower surface as shown in Fig. 2.1.

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

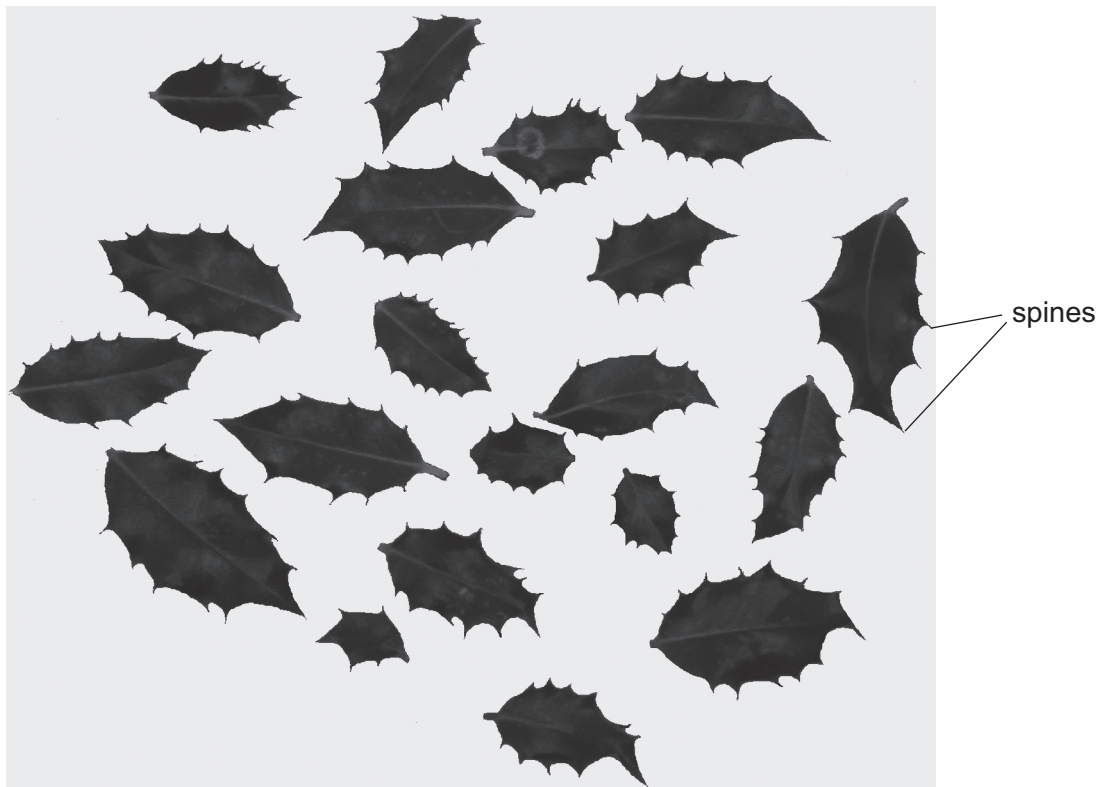
- (ii) Measure the size of the grid squares.  
Calculate the area of the lower surface of this leaf.

Show your working.

area ..... cm<sup>2</sup> [2]

- (b) Some students investigated the variation in the number of spines on the holly leaves. Fig. 2.2 shows the outline of twenty holly leaves that they collected from the same tree.

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**Fig. 2.2**

- (i) Count the number of spines on each leaf and complete the tally chart in Table 2.1.

**Table 2.1**

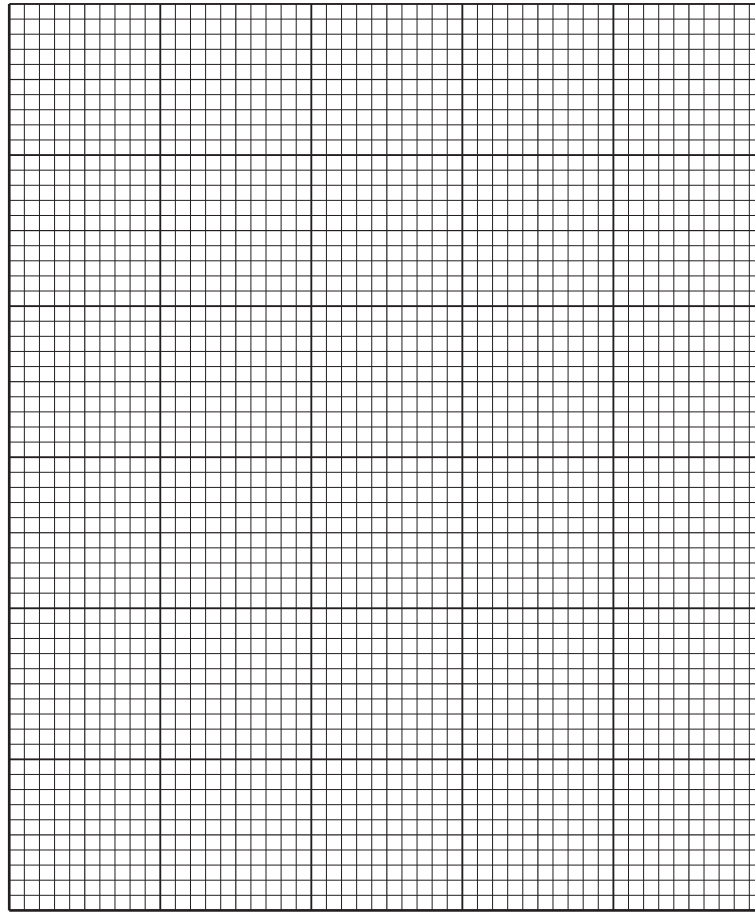
number of spines	tally	total number of leaves
6 or fewer		
7		
8		
9		
10		
11		
12		
13		
14 or more		

[3]



(ii) Plot the data from Table 2.1 to show the variation in the number of spines per leaf.

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[4]

(iii) Suggest how you might improve this investigation.

.....

.....

.....

.....

.....

.....

..... [3]

[Total: 13]

- 3 Bacteria can multiply quickly when grown in a nutrient rich medium in a flask. Fig. 3.1 shows how the numbers increase with time.

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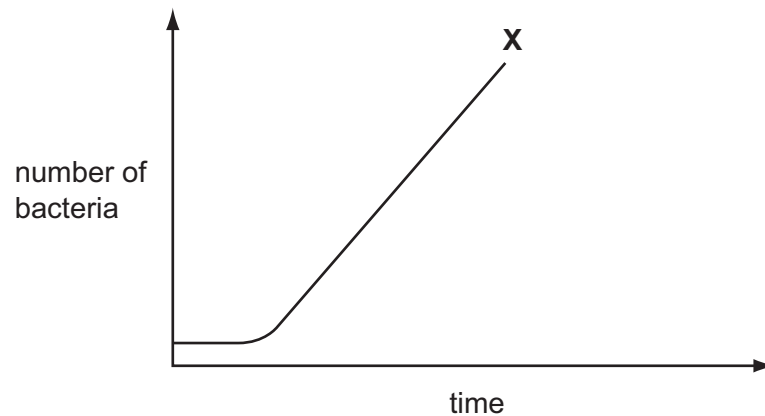


Fig. 3.1

- (a) After point **X** on the curve, the population growth continues at a different rate.
- (i) Extend the curve to show what might happen to an ageing bacterial population. [1]
- (ii) Suggest a reason for the change you have shown.

.....

..... [1]

An antibiotic is a chemical substance which is produced by one type of microorganism.

This chemical kills or stops the growth of another microorganism.

The antibiotic penicillin is produced by culturing the fungus *Penicillium chrysogenum*.

Fig. 3.2 shows part of the fungus as seen with the aid of a microscope.

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Fig. 3.2

(b) On Fig.3.2, label the following structures,

- (i) a hypha;
- (ii) a spore.

[2]

(c) Fig. 3.3 shows the cell of a fungus.

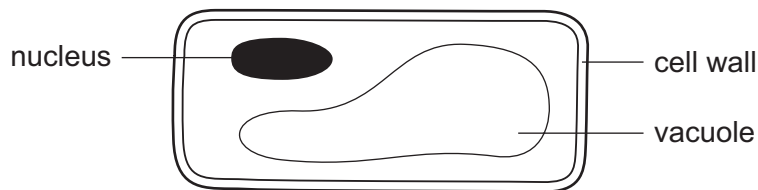


Fig. 3.3

Compare the cell of a fungus shown in Fig. 3.3 with a green plant cell and an animal cell.

- difference from a green plant cell .....
- similarity to a plant cell .....
- difference from an animal cell ..... [3]

- (d) Penicillin can be used to treat bacterial infections. It stops the formation of cell walls in bacteria.

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Suggest why penicillin can be used to treat bacterial infections in humans.

.....

.....

.....

..... [2]

- (e) Seven small paper discs were soaked in solutions of different antibiotics, **A** to **G**.

The paper discs were placed on an agar plate which was evenly covered with growing bacteria. This was left for a short time.

The results are shown in Fig. 3.4.

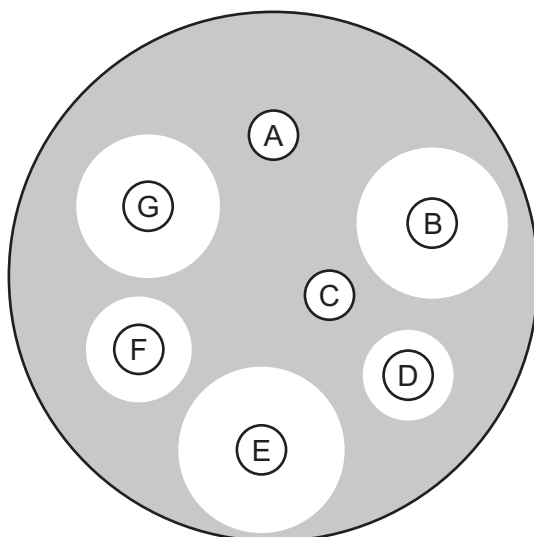


Fig. 3.4

- (i) Select which antibiotic, **A** to **G**, is most effective.

..... [1]

- (ii) Give a reason for this choice of antibiotic in (i).

.....

..... [1]

[Total: 11]

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