UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE NAME	

CENTRE NUMBER						CANDIDATE NUMBER				

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	
1	
2	
3	
Total	

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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.

[3]

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(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 to10

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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.....

.....

.....

.....

.....

.....

.....

..... [6]

[Total: 16]

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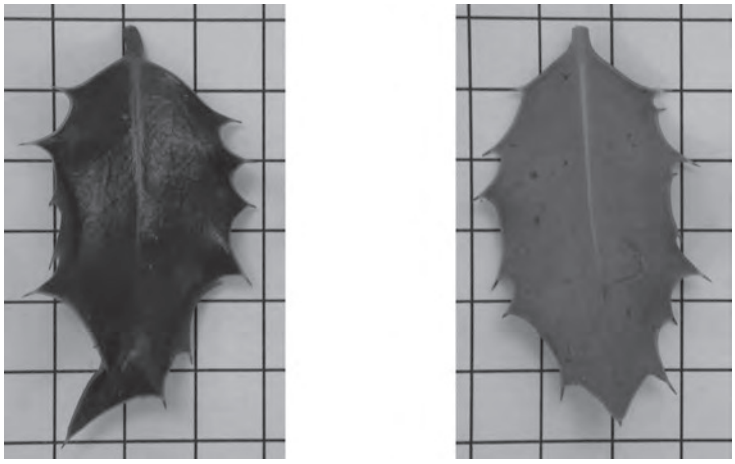
2 A number of leaves were removed from a holly tree *Ilex aquifolium*. Fig. 2.1 shows the upper and the lower surfaces of one leaf.



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^2 [2]

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(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.

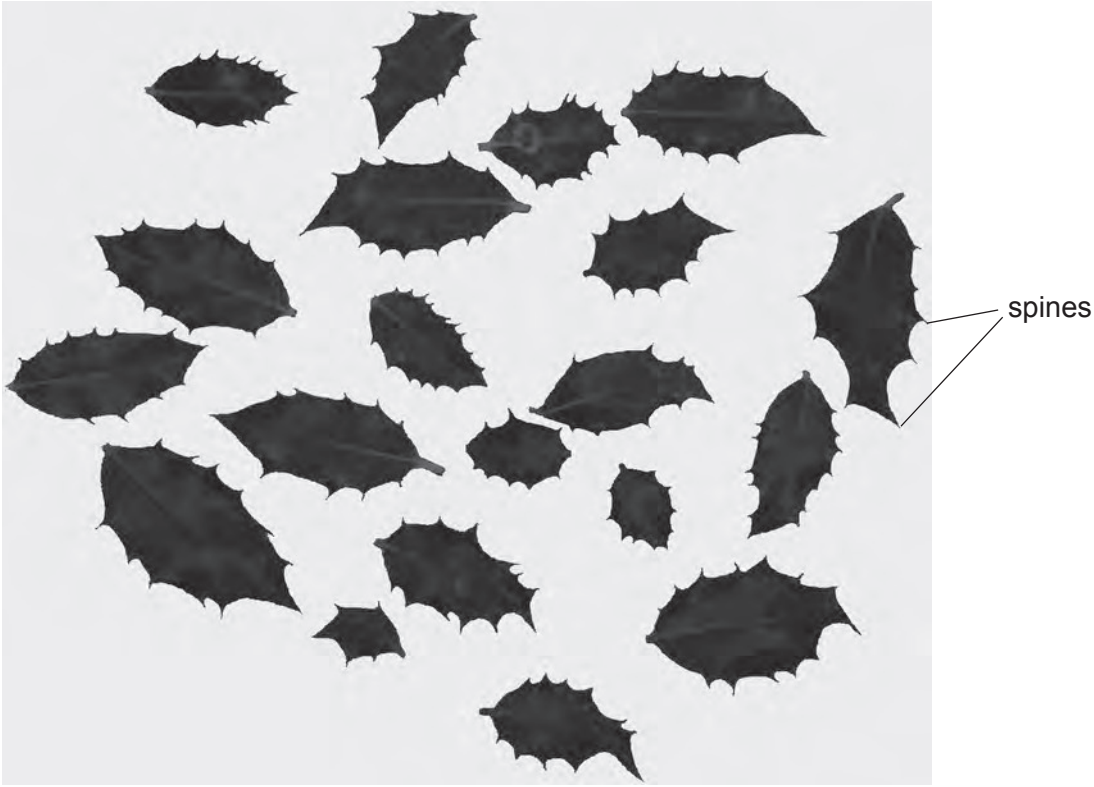

Fig. 2.2

(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]

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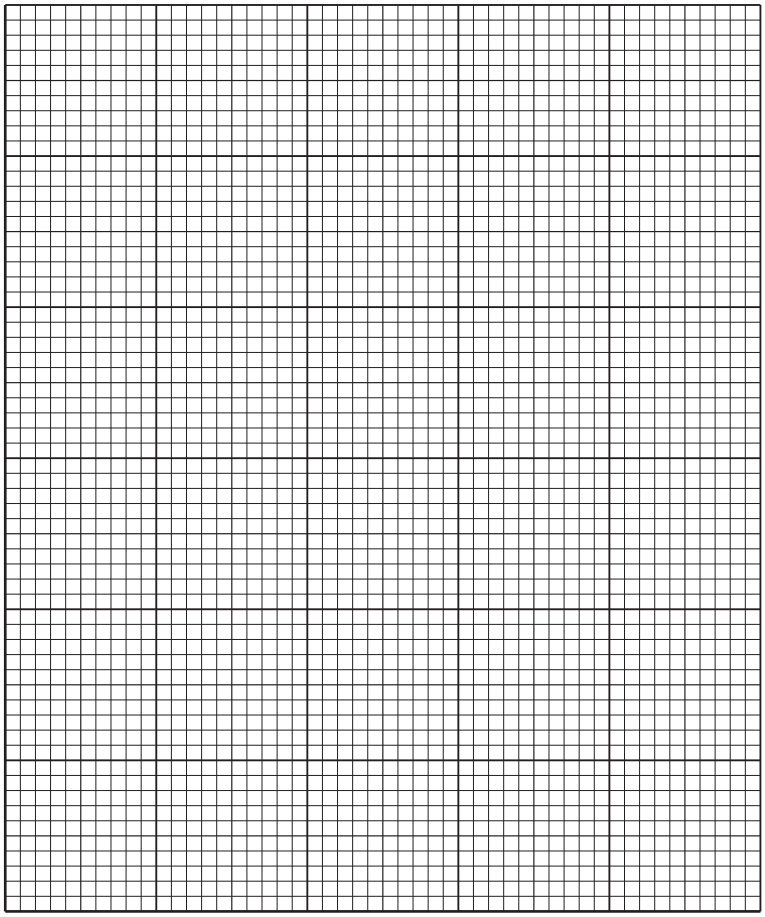
(ii) Plot the data from Table 2.1 to show the variation in the number of spines per leaf.



[4]

(iii) Suggest how you might improve this investigation.

.....

.....

.....

.....

.....

..... [3]

[Total: 13]

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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.

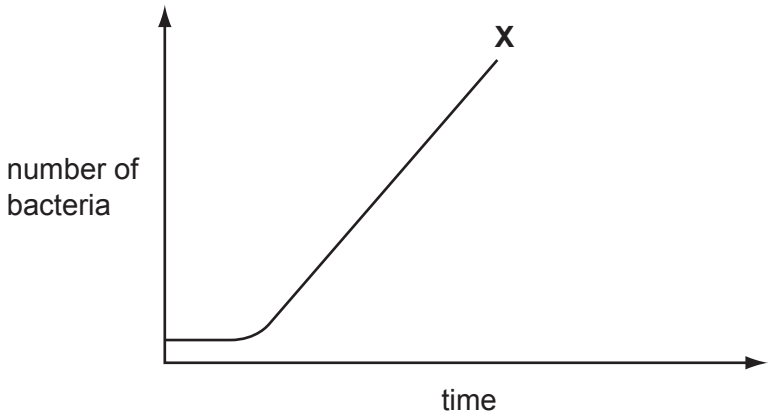

Fig. 3.1

(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*.

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

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.

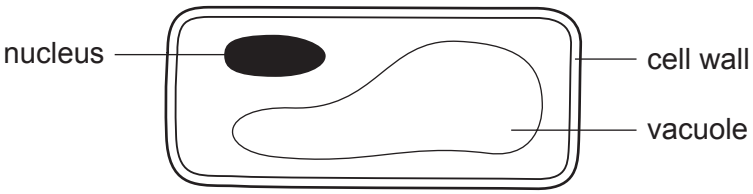

Fig. 3.3

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]

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

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.

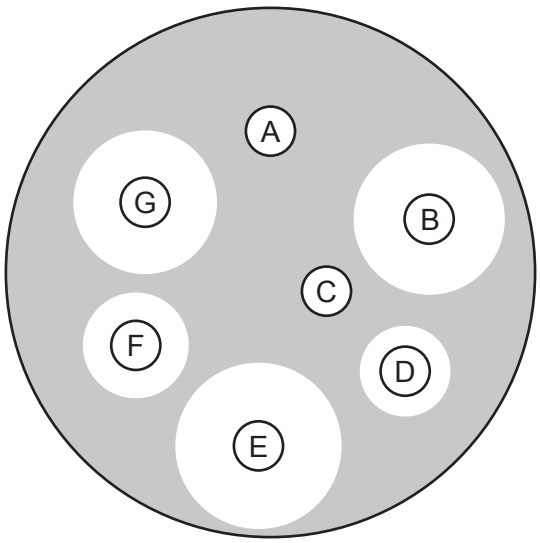

Fig. 3.4

(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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