UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

7396921964

Biology **0610/51**

Paper 5 Practical Test **May/June 2013**

1 hour 15 minutes

Candidates answer on the Question Paper.

Additional Materials: As listed in the Confidential Instructions.

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 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.

Electronic calculators may be used.
You may lose marks if you do not show your working or if you do not use appropriate units.

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	

This document consists of **10** printed pages and **2** blank pages.

Read through the whole question before starting work.

For Examiner's Use

1 Fig. 1.1 shows a bird's egg. Part of the shell has been removed.

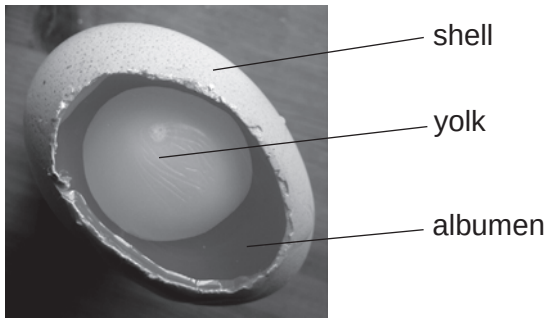

Fig. 1.1

Approximately 90 % of albumen is water. The remaining 10 % is made up of other substances such as reducing sugar.

(a) Describe how you could safely test a sample of albumen for reducing sugar.

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..... [4]

(b) You have been given a beaker containing albumen, labelled **albumen**.
You are going to test the albumen for the presence of protein.

- Put on the eye protection provided.
- Use the syringe to put 2 cm^3 of albumen into a test-tube.
- Add 1 cm^3 of Biuret reagent, from the bottle labelled **Biuret**.

Describe your observation **and** state your conclusion.

observation .....

.....

conclusion .....

..... [2]

(c) You are going to investigate the effect of acid on albumen.

- Put 2 cm^3 of albumen into each of **two** clean test-tubes.
- Label the test-tubes **1** and **2**.
- Carefully and slowly pour 2 cm^3 of water, from the beaker labelled **water**, **down the inside** of test-tube **1**.
- Carefully and slowly pour 2 cm^3 of acid, from the beaker labelled **acid**, **down the inside** of test-tube **2**.
- Gently move the test-tubes back and forwards. Do **not** shake the test-tubes up and down.

- Record the time. .....
- Observe the test-tubes after 5 minutes.

While you are waiting, continue with Questions 1(d) and (e).

Describe your observations **and** state your conclusion.

observation, test-tube **1** .....

.....

observation, test-tube **2** .....

.....

conclusion .....

.....

..... [3]

(d) State why water was added to test-tube **1**.

.....

.....

..... [1]

(e) Fat is present in the yolk.
A student carried out the emulsion test on a sample of yolk and it gave a positive result.
State what the student would observe.

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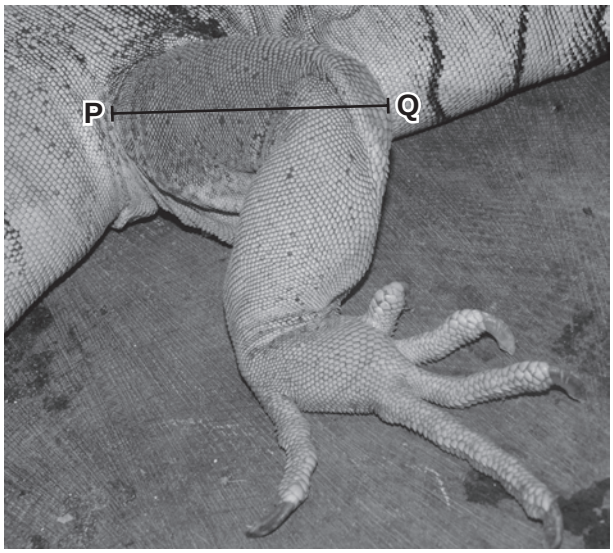
..... [1]

[Total: 11]

[Turn over

2 Fig. 2.1 shows the back leg of two animals.
The animals belong to two different vertebrate groups.



animal **A**

animal **B**

Fig. 2.1

(a) (i) Describe **one similarity**, **visible** in Fig. 2.1, between the leg of animal **A** and the leg of animal **B**.

.....

.....

..... [1]

(ii) Complete Table 2.1 to state **two differences**, **visible** in Fig. 2.1 between the leg of animal **A** and the leg of animal **B**.

Table 2.1

feature	animal **A**	animal **B**

[3]

(b) Make a large, labelled drawing of the leg of animal **A**.

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[5]

(c) You are going to calculate the magnification of your drawing of the photograph of the leg of animal **A**.

Length of line **PQ** in Fig. 2.1 is 36 mm.
Draw line **PQ** on your drawing in the same position as in Fig. 2.1.

Length of line **PQ** in drawing ..... mm

Calculate the magnification of your drawing.
Show your working.

magnification × ..... [3]

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(d) A population of animals was studied over nine years. The changes in the population of **males** are shown in Fig. 2.2

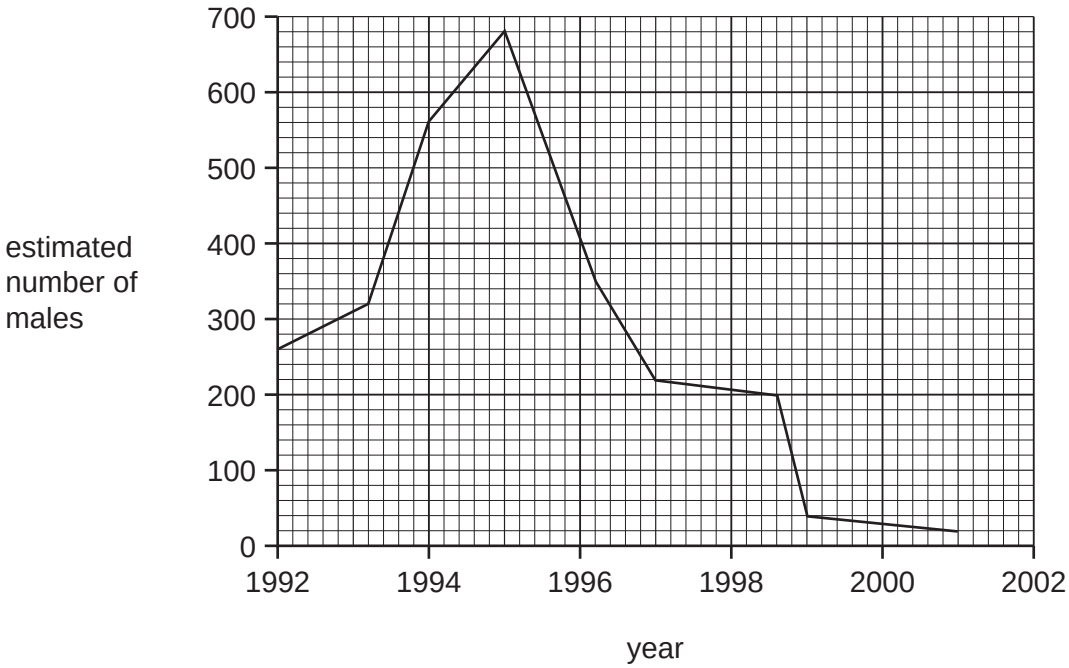

Fig. 2.2

(i) Use the graph to estimate the **total** population of males **and** females in 1992. Assume that the number of males and females is equal.
Show your working.

total population of males and females ..... [1]

(ii) Describe the changes in the population from 1992 to 2001.

.....

.....

.....

.....

.....

.....

..... [3]

[Total: 16]

For Examiner's Use

3 **(a)** An investigation was carried out on the growth of onion seedlings.
Onion seedlings were grown in a tray.
One millimeter was removed from the tips of all of the onion seedlings on the left side of the dividing line, as shown in Fig. 3.1.

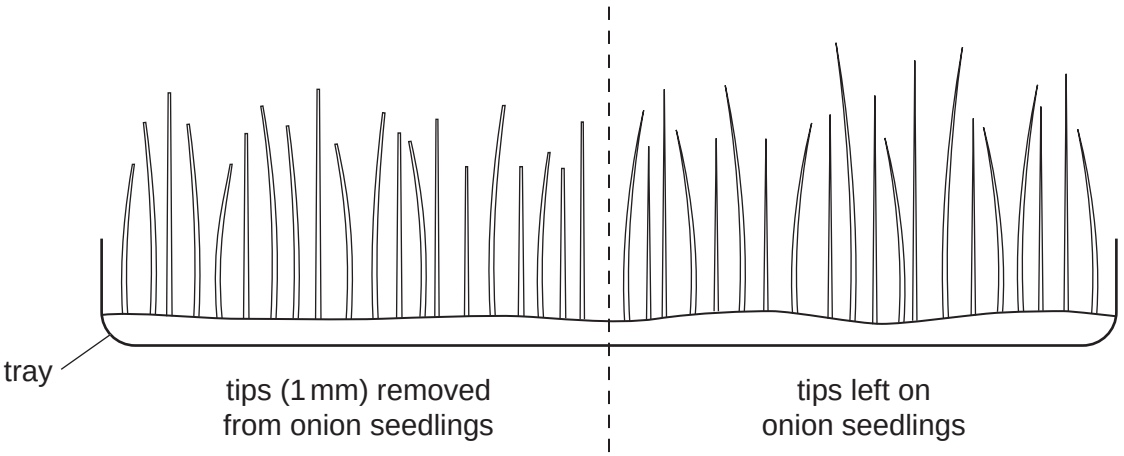

Fig. 3.1

Ten onion seedlings were cut at soil level from each side of the tray.
The heights of these onion seedlings were measured and recorded.
These are shown as the start heights in Table 3.1.

After three days, ten more onion seedlings were cut from each side, measured and recorded. The heights are shown in Table 3.1.

(i) Suggest why the onion seedlings were cut and removed from the tray before they were measured.

.....

..... [1]

(ii) State why a sample of ten onion seedlings is better than a sample of three onion seedlings.

.....

..... [1]

[Turn over

Table 3.1 shows the heights of the onion seedlings at the start and of those measured after three days.

Table 3.1

	height of seedling / mm			
	tips removed		tips left on	
	start	after three days	start	after three days
	84	70	70	63
	61	76	79	65
	54	63	57	83
	57	76	58	79
	56	80	53	83
	62	71	52	74
	68	73	61	76
	45	60	63	60
	64	76	51	85
	49	75	76	62
total height / mm	600		620	
mean height / mm	60		62	

(iii) Complete Table 3.1 by calculating the total height **and** mean height of the onion seedlings after three days. [2]

(iv) Calculate the mean **increase** in height of the onion seedlings:

tips removed ..... mm

tips left on ..... mm [1]

(b) The experiment was repeated with another tray of onion seedlings.
The same experiment was then performed on beetroot seedlings.
The results are shown in Table 3.2.

Table 3.2

mean increase in height / mm			
onion seedlings		beetroot seedlings	
tips removed	tips left on	tips removed	tips left on
10	9	1	7

(i) Draw a bar chart on Fig. 3.2 to show the data in Table 3.2.

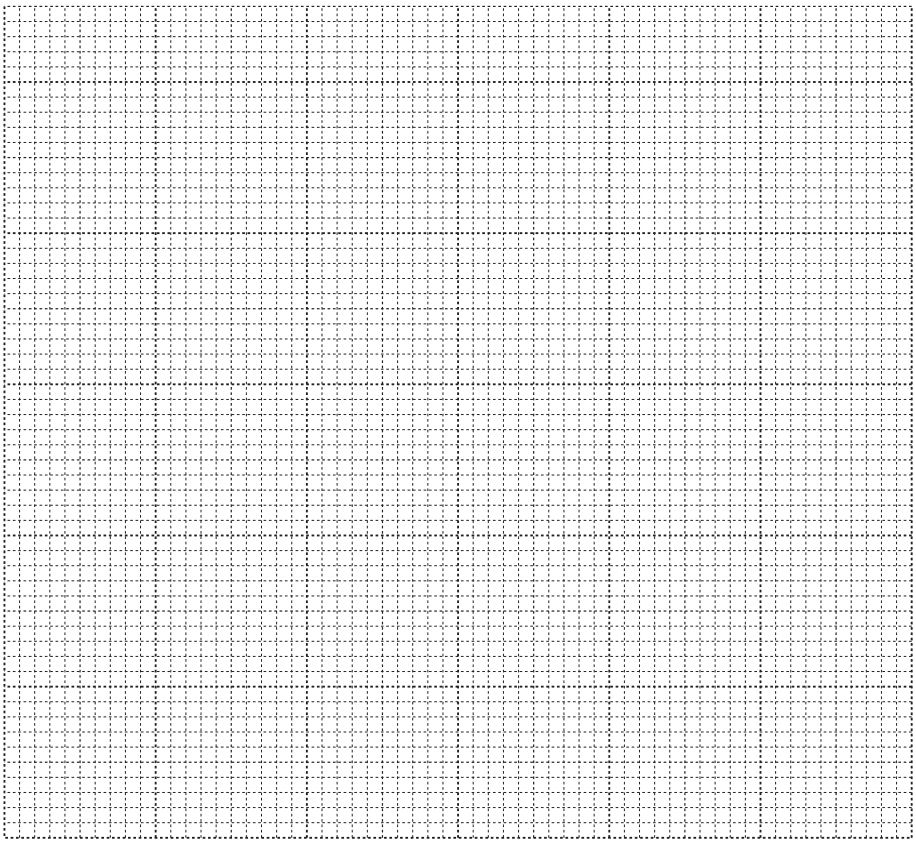

Fig. 3.2

[4]

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(ii) Describe the effect of removing the tips on the growth of onion and beetroot seedlings.

onion .....

.....

beetroot .....

..... [2]

(iii) Suggest where growth takes place in the shoots of onion and beetroot seedlings.

onion .....

.....

beetroot .....

..... [2]

[Total: 13]

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