



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE
NAME

CENTRE
NUMBER

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BIOLOGY

0610/06

Paper 6 Alternative to Practical

May/June 2009

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 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	

This document consists of **9** printed pages and **3** blank pages.



- 1 Fig.1.1a shows a whole garlic bulb and Fig.1.1b shows a section with many 'cloves' arranged around a central stem.

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Fig.1.1a

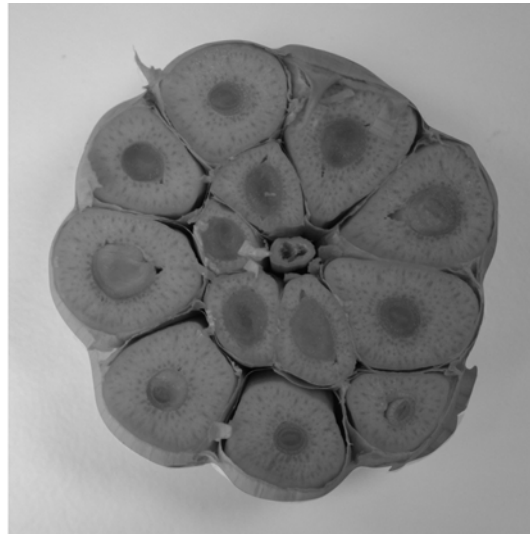


Fig.1.1b

Fig. 1.2a shows a whole potato and Fig. 1.2b shows a section of the potato stem tuber.



Fig.1.2a



Fig.1.2b

(a) Make a large, labelled drawing of Fig. 1.1b. to show the section of the garlic bulb.

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[5]

(b) (i) Compare **one** visible similarity between the garlic bulb and the potato tuber.

.....
.....

[1]

(ii) Describe **two** visible differences between the garlic bulb and the potato tuber.

.....
.....
.....
.....

[2]

(c) Describe how you would carry out tests on the garlic and the potato to compare the starch content and the reducing sugar content. Include any necessary safety precautions.

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starch

.....

.....

.....

reducing sugar

.....

.....

.....

[6]

[Total: 14]

2 As the heart pumps blood around the human body, a pulse may be felt at certain sites, such as the one shown in Fig. 2.1.

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(a) (i) Label on Fig. 2.1, **one** other site where a pulse may be felt.

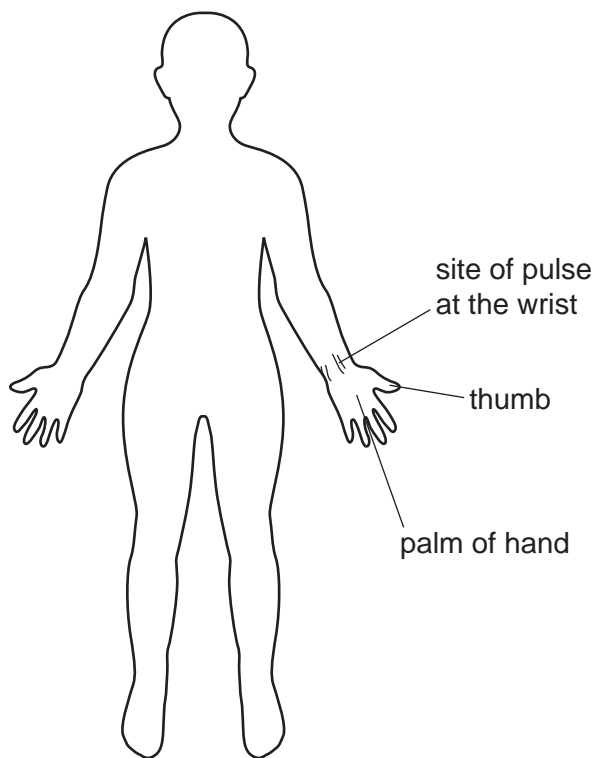


Fig. 2.1

[1]

(ii) Suggest why it is possible to feel the pulse at these sites.

.....

.....

[2]

- (b) A student counted the number of pulses felt in 15 seconds at the site shown on their wrist. The student did this three times.

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The results are recorded in Table 2.1.

Table 2.1

	pulses per 15 seconds	pulses per minute
1 st count	18	
2 nd count	19	
3 rd count	17	
mean		

- (i) Complete the righthand column in Table 2.1 to show the number of pulses per minute for each count and the mean pulses per minute. [2]

- (ii) Explain why it is advisable to repeat readings at least three times.

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

- (iii) State **two** factors that may affect heart rate. For each factor explain its effect on heart rate.

factor	explanation
1
2

[4]

7

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QUESTION 2 CONTINUES ON PAGE 8

(c) Body mass and heart rates for a number of different mammals are shown in Table 2.2.

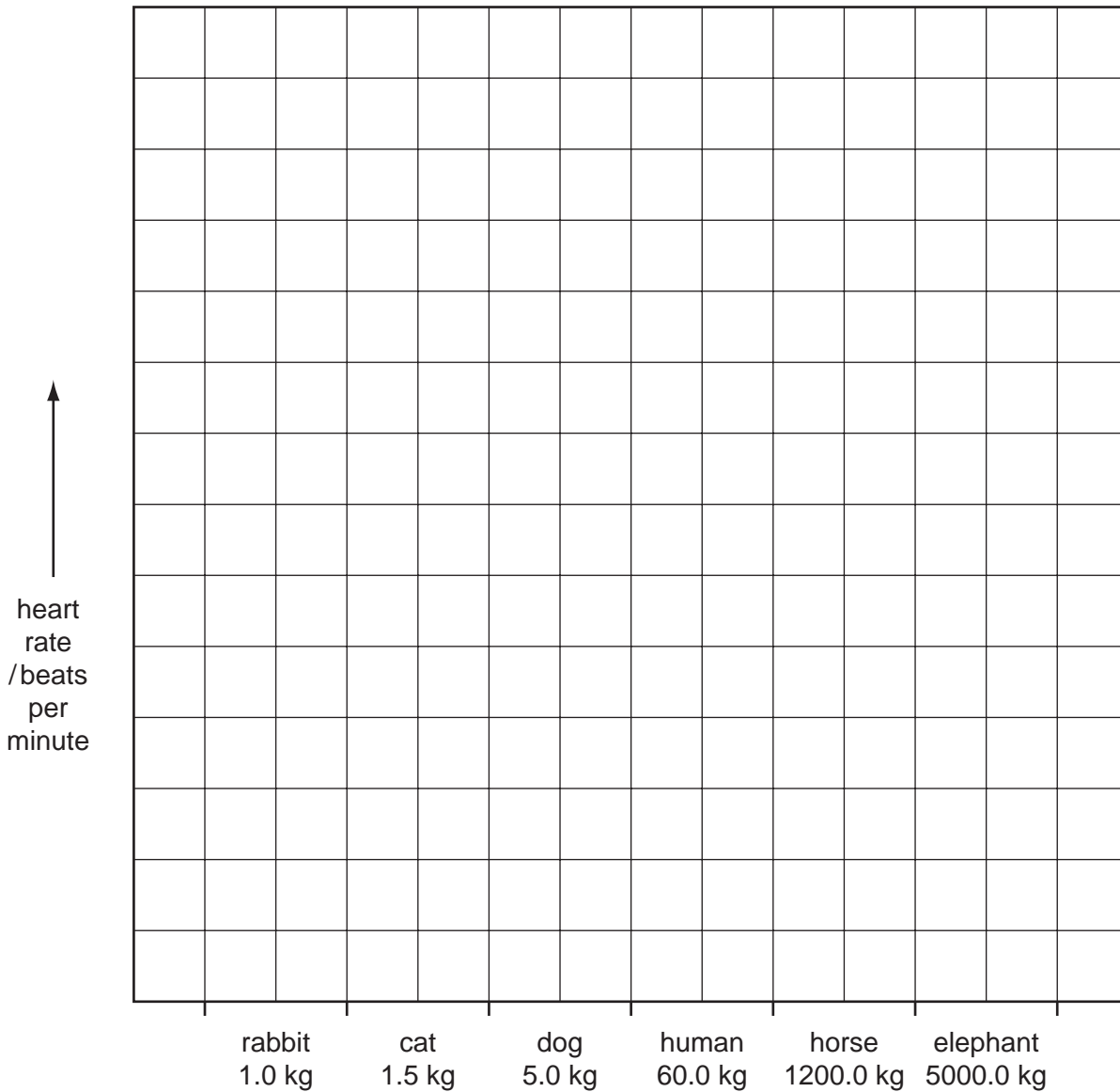
Table 2.2

mammal	body mass / kg	heart rate / beats per minute
rabbit	1.0	200
cat	1.5	150
dog	5.0	90
human	60.0	
horse	1200.0	44
elephant	5000.0	30

Copy the mean pulses per minute from Table 2.1 into Table 2.2.

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(i) Plot the data in a bar chart to show heart rate for all six mammals.



[5]

(ii) Describe the general trend shown by this data plotted on the bar chart.

.....

[1]

(d) An elephant can live for 70 years, a cat for 15 years and a rabbit for 9 years.

Suggest how heart rate and body mass might affect life expectancy of mammals.

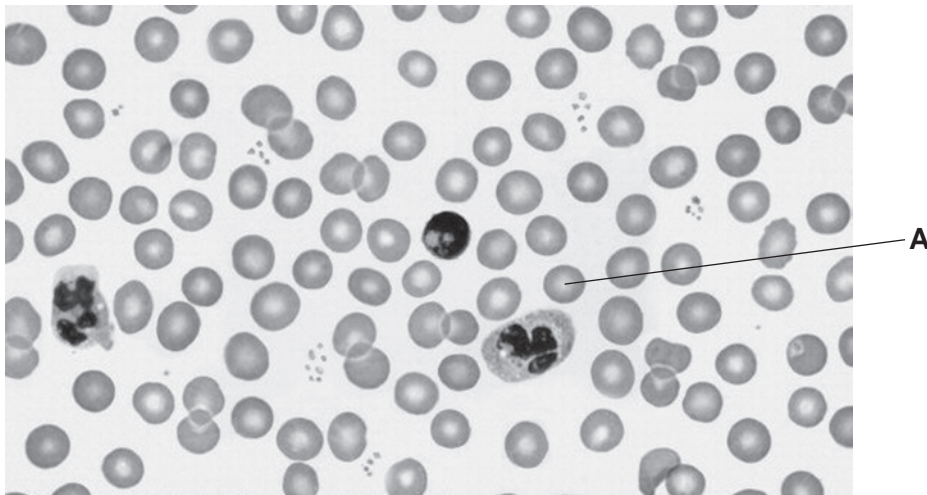
.....

[1]

[Total: 17]

3 Fig. 3.1 shows a photomicrograph of a human blood smear.

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Magnification $\times 800$

Fig. 3.1

- (a) (i) On Fig. 3.1, draw label lines and name **three** different types of blood cell. [3]
 (ii) Name **two** parts of the blood that can pass through the capillary walls.

1. [2]
 2. [2]

- (b) (i) Measure the diameter of the blood cell labelled **A**.
 mm [1]

- (ii) The photomicrograph has been enlarged by $\times 800$, calculate the actual size of cell **A**.

show your working

actual size of cell **A** [2]

- (iii) State the function of cell **A**.
 [1]

[Total: 9]

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