

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
General Certificate of Education Ordinary Level

**BIOLOGY**

Paper 3 Practical Test



**5090/03**

October/November 2004

**1 hour 15 minutes**

Candidates answer on the Question Paper.

Additional Materials: As listed in Instructions to Supervisors

Candidate  
Name

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Centre  
Number

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Candidate  
Number

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**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 in the spaces provided on the Question Paper.  
You may use a soft pencil for any diagrams, graphs or rough working.  
Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **both** questions.

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

DO NOT WRITE IN THE BARCODE.

DO NOT WRITE IN THE GREY AREAS BETWEEN THE PAGES.

If you have been given a label, look at the details. If any details are incorrect or missing, please fill in your correct details in the space given on this page.

Stick your personal label here, if provided.

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

This document consists of **6** printed pages and **2** blank pages.



- 1 Four 'urine solutions', **A**, **B**, **C** and **D** have been made up to represent the urine of people who may be suffering from certain diseases.

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- A person who is diabetic will have glucose in their urine.
- A person who has kidney disease will have protein in their urine.
- A person who has liver disease will have bile salts in their urine.
- A healthy person will have none of these in their urine.

You are required to investigate the contents of the four 'urine solutions'.

- The presence of reducing sugar and protein can be shown by the usual food tests.
- The presence of bile salts can be shown by placing a small amount of sulphur (from the end of a spatula, or a wooden splint), on the surface of the solution; the sulphur will sink if bile salts are present.

- (a) (i) Complete Table 1.1 to show how to carry out tests for reducing sugar, protein and bile salts and the results that could be expected.

**Table 1.1**

	for reducing sugar	for protein	for bile salts
reagent used			
how treated			
result expected if present			
result expected if not present			

[8]

(ii) Table 1.2 is incomplete. Carry out any tests needed to complete Table 1.2.

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**Table 1.2**

'urine solution'	test results		
	glucose	protein	bile salts
A			negative
B		negative	negative
C	negative	negative	
D	negative		

[4]

(iii) State the conclusions that can be drawn about the health of these people from the tests on the 'urine solutions'.

A .....

B .....

C .....

D ..... [4]

(b) Describe how bile and a certain enzyme work together for the effective digestion of one of the main foodstuffs.

.....

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.....

.....

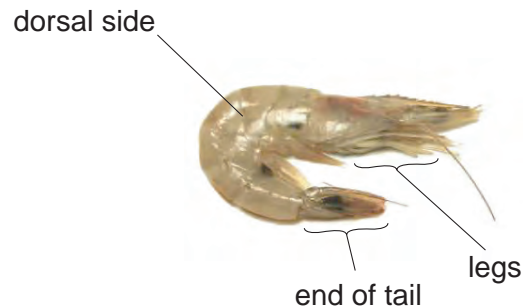
..... [4]

[Total: 20]

- 2 You are required to observe the detailed structure of prawn **P**. The prawn may be fresh, or it might have been cooked; this will not affect the observations that have to be made. Marks will be awarded for the accuracy of your observations and the way you record them in your drawings.

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Fig. 2.1 is a photograph of a prawn. It is labelled to help in identifying the parts of the prawn.



**Fig. 2.1**

- (a) Make a large, clear drawing of the actual prawn **P** from one side.

Labels are **not** required. Do **not** draw the photograph above.

You are advised to spend no more than 15 minutes on this drawing.

[8]

**(b) (i)** Spread out the tail of prawn **P**, like a fan.

Make a large, clear drawing of the tail. Use the hand-lens that is provided.

Labels are **not** required.

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Use

[3]

**(ii)** Calculate the magnification of your drawing of the tail, as follows :

1. Rule a line across your drawing of the tail.
2. Measure the size of your drawing along this line and record it.
3. Measure the equivalent size of the tail of your prawn **P** and record it.
4. Use these figures to calculate the magnification of your drawing of the tail of prawn **P**.

Show your working clearly.

*magnification* = .....

[4]

- (c) ● Prawns live in the sea. In order to study prawns, students set up an aquarium in the laboratory.
- The process of aerobic respiration is a reaction controlled by enzymes.
- (i) State in words or symbols the equation for the process of aerobic respiration.

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

- (ii) Using your knowledge of aerobic respiration suggest how a healthy aquarium for keeping prawns might be set up and maintained.

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.....  
.....  
.....  
..... [3]

[Total: 20]

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