OCR
RECOGNISING ACHIEVEMENT

OXFORD CAMBRIDGE AND RSA EXAMINATIONS

Advanced GCE

BIOLOGY 2806/03/TEST

Practical Examination (Part B): Practical Test

Tuesday **20 MAY 2003** Morning 1 hour 30 minutes

Candidates answer on the question paper
Additional materials:
Electronic calculator
Ruler (cm/mm)
Candidate's Plan (Part A of the Practical Examination)

Candidate Name	Centre Number	Candidate Number

TIME 1 hour 30 minutes

INSTRUCTIONS TO CANDIDATES

- Write your name in the space above.
- Write your Centre number and Candidate number in the boxes above.
- Answer **all** the questions.
- Write your answers in the spaces on the question paper.
- Read each question carefully before starting your answer.

INFORMATION FOR CANDIDATES

- In this Practical Test, you will be assessed on the Experimental and Investigative Skills:
  Skill I Implementing
  Skill A Analysing evidence and drawing conclusions
  Skill E Evaluating
- You may use an electronic calculator.
- You are advised to show all the steps in any calculations.

FOR EXAMINER'S USE		
Qu.	**Max.**	**Mark**
Planning	**16**	
1	**30**	
2	**14**	
TOTAL	**60**	

This question paper consists of 7 printed pages and a Report Form.

Registered Charity Number: 1066969
[Turn over

Question 1 [60 minutes]

You are required to investigate the effect of temperature on the rate of respiration of yeast in the yeast/glucose mixture with which you have been supplied.

Proceed as follows:

1. Half-fill a beaker with water and adjust its temperature to **35 °C**.
2. Push the plunger fully into the syringe.
3. Draw **1 cm^3** of the yeast/glucose mixture into the syringe.
4. Draw **1 cm^3** of air into the syringe.
5. Two-thirds fill a boiling tube with water at **35 °C** from the beaker and place the boiling tube in a rack.
6. Attach a blob of plasticine to the plunger of the syringe and drop the syringe into the boiling tube of water.

The syringe should sink to the bottom of the tube (see Fig. 1.1). If this does not happen, remove the syringe and add more plasticine to the plunger.

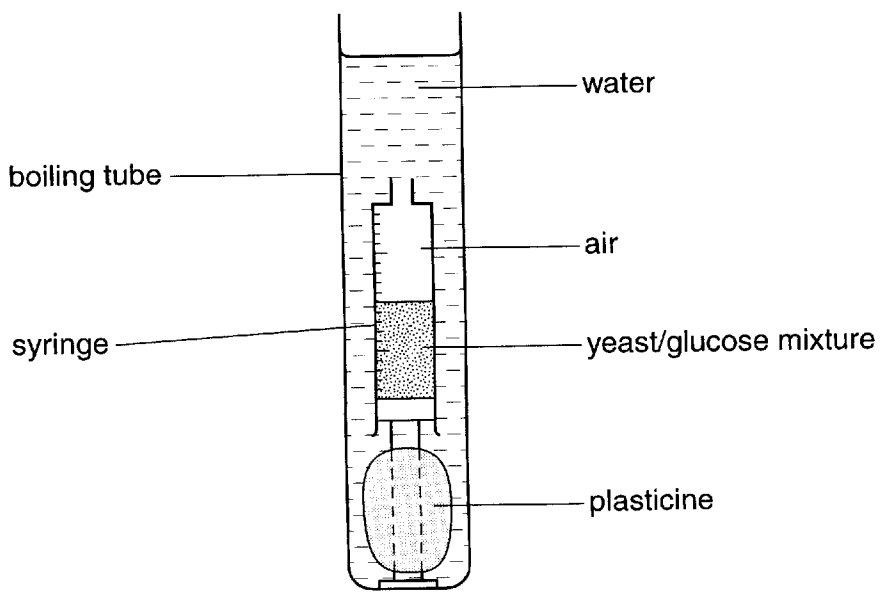

Fig. 1.1

Soon after you have set up the apparatus, bubbles of gas will emerge from the syringe nozzle.

You are required to obtain as much information as possible on the effect of temperature on the bubbling rate of the mixture.
You should work within the temperature range of 10 °C to 70 °C.
*Use **five** different temperatures **including** 35 °C.*
Start by devising a method for obtaining an accurate measure of the bubbling rate at 35 °C.

(a) Describe briefly your method for obtaining accurate results at 35 °C and give the results that you obtained for the bubbling rate at this temperature.

method .....

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bubbling rate

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Continue with the investigation of the effect of temperature on bubbling rate.
Your method should give as valid and reliable results as possible in the time available.

(b) Describe your method stating how you attempted to produce valid and reliable results for this investigation.

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(c) Record your results in a table.

(d) Describe and explain your results as fully as possible.

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For Examiner's Use

(e) State **five** possible sources of error in your investigation that you could not eliminate.

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3 .....

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4 .....

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5 .....

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(f) Describe how you could modify and extend this investigation, **including by using different apparatus**, to eliminate the sources of error you have identified in **(e)** and produce more valid results.

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[Total: 30]

Question 2 [30 minutes]

K1 is a stained section of a pancreas.

Examine **K1** using both low power and high power objectives of your microscope. Move the slide around so that you see the different types of structures present.

Most of the organ consists of glandular structures responsible for secreting pancreatic juice into the gut lumen. Scattered within this tissue are large numbers of islets of Langerhans.

(a) State **two visible** features of **K1** which allowed you to distinguish islets of Langerhans from the surrounding tissue.

1 .....

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2 .....

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(b) **(i)** Draw the outline of **one** islet. Within this outline make a high power drawing of a small portion to show its detailed structure.

Do not draw more than **four** cells.

Annotate your drawing to describe how the structures that you draw are stained in the section.

(ii) State how **one visible** feature of the islets of Langerhans relates to their function.

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K2 is a stained section through an anther of a flowering plant.

Examine **K2** using your microscope.

(c) (i) State the evidence that a process of cell division was occurring in **K2**.

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Fig. 2.1 is a plan drawing of the anther of a flowering plant similar to **K2**. You are not expected to be familiar with this specimen.

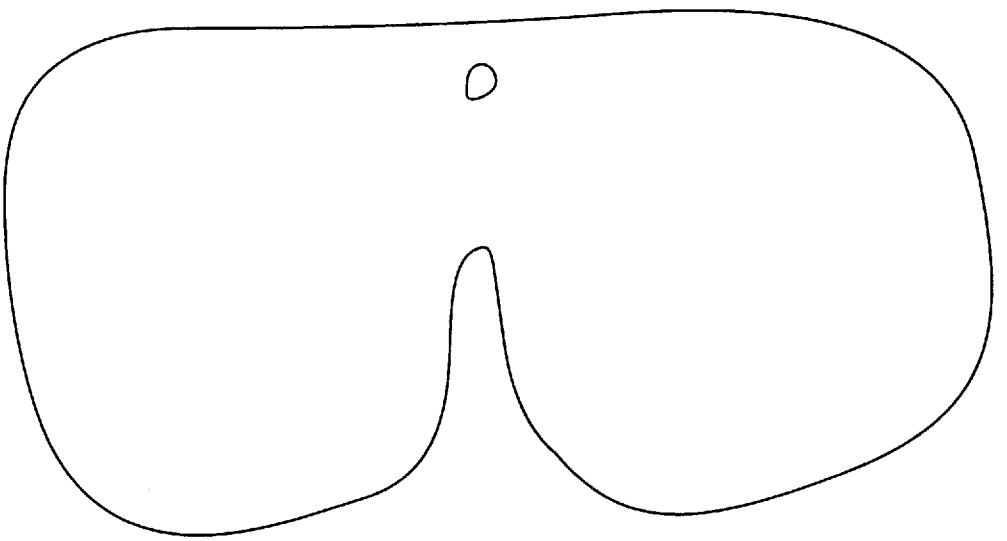

Fig. 2.1

(ii) Mark, **with an arrow placed on Fig. 2.1**, a position in which you saw evidence of cell or nuclear division in **K2**.

(iii) Meiosis occurs in anthers. State **two** ways in which the products of meiosis are different from all the other cells making up the anther.

1 .....

2 .....

[Total: 14]

REPORT FORM

The teacher responsible for this subject is asked to answer the following questions.

(a) Was the candidate physically handicapped in drawing, dissecting or using a microscope or is the candidate colourblind? If so, give brief particulars.

(b) Was the candidate handicapped by deficient material or apparatus? If so, give brief particulars.

(c) Was it necessary to make any substitutions for the materials sent from OCR? If so, give details and reasons.

(d) Any comments.

Signed .....

N.B. Information which applies to all candidates need be given on the first candidate's answer book only.