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**BIOLOGY**

**5090/31**

Paper 3 Practical Test

**October/November 2014**

CONFIDENTIAL INSTRUCTIONS

**1 hour 15 minutes**

**Great care should be taken to ensure that any confidential information given does not reach the candidates either directly or indirectly.**

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If you have any problems or queries regarding these Instructions, please contact CIE  
by e-mail: International@cie.org.uk  
by phone: +44 1223 553554  
by fax: +44 1223 553558  
stating the Centre number, the nature of the query and the syllabus number quoted above.

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

**READ THESE INSTRUCTIONS FIRST**

These instructions give details of the apparatus required by each candidate for each experiment in this paper. A summary of the questions that will be presented to the candidates is included, where appropriate, to allow the Biology teacher to test the apparatus appropriately. **No access to the question paper is permitted in advance of the examination session.**

If a candidate breaks any of the apparatus, or loses any of the material supplied, the matter should be rectified and a note made in the Supervisor's Report.

If arrangements are made for different sessions for different groups of candidates, care must be taken to ensure that the different groups of candidates are effectively isolated so that **no information passes between them.**

Supervisors are advised to remind candidates that **all** substances in the examination should be treated with caution. Pipette fillers and safety goggles should be used where necessary.

In accordance with COSHH (Control of Substances Hazardous to Health) Regulations, operative in the UK, a hazard appraisal of the examination has been carried out.

The following codes are used in the left margin where relevant.

**C** = corrosive substance

**F** = highly flammable substance

**H** = harmful or irritating substance

**O** = oxidising substance

**T** = toxic substance

**N** = harmful to the environment

Centres are reminded that they are **not** permitted to open the question paper envelopes before the examination. There are **no** exceptions to this. Centres are also referred to the Handbook for Centres which covers Security of Question Papers and Examination Materials and Practical Examinations in Science Subjects.

If there are any difficulties with any aspect of setting up this practical examination that the Centre is not able to resolve, it is essential for Centres to contact the Product Manager as soon as possible by e-mail to [info@cie.org.uk](mailto:info@cie.org.uk), by fax to +44 1223 553558 or by phone to +44 1223 553554.

## SUPERVISOR'S INSTRUCTIONS – CONFIDENTIAL

## Question 1

Each candidate to be provided with:

- (i) 40 cm<sup>3</sup> yeast mixture

Prepare in bulk by adding 14 g dried yeast to 400 cm<sup>3</sup> of glucose solution containing 40 g of dissolved glucose. It is necessary to warm the mixture to 35 °C while it is standing in bulk. Present to the candidates at room temperature in two beakers, each containing 20 cm<sup>3</sup> of yeast mixture, labelled **A** and **B**.

This needs to be prepared about 15 minutes **before** the start of the examination.

- (ii) 2 × 20 cm<sup>3</sup> syringes with plunger but no needles. Label one **A** and the other **B** using a water-proof pen.
- (iii) 5 cm<sup>3</sup> water in a test-tube, labelled **A**
- (iv) 5 cm<sup>3</sup> of undiluted ethanol in a test-tube, labelled **B**
- (v) Glass rod for stirring a mixture – approximately 12 cm in length
- (vi) Paper towels to wipe glass rod and to clear spillages
- (vii) 2 × glass tubes, approximately 20 cm in length, 2 mm internal (bore) diameter, each attached to a piece of flexible tubing about 2 cm in length, as shown in Fig. 1.1. A ring needs to be drawn using waterproof ink 10 mm below the rubber tubing. The rubber tubing should be thin and used to join the glass tubing to the base of the labelled syringe.

These must be presented to the candidates fully assembled, laying horizontally on a sheet of A4 plain paper.

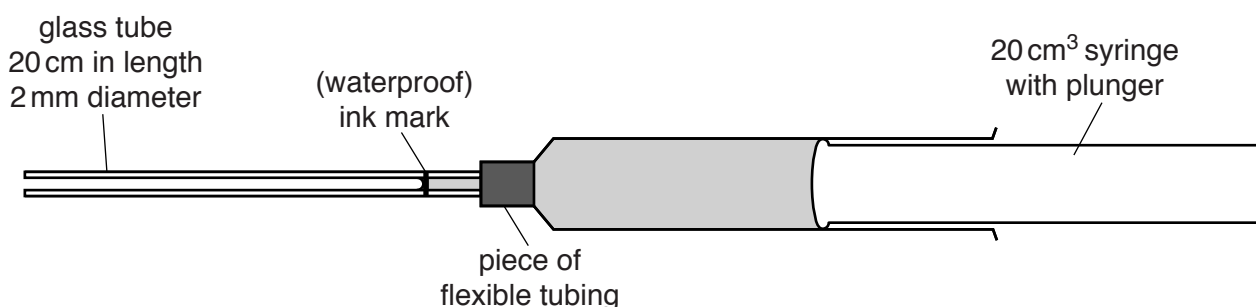


Fig. 1.1

- (viii) Timer or view of a clock
- (ix) Ruler (mm)
- (x) One piece of black card 4 cm × 20 cm.

Before the examination, the Supervisor should try out part of this investigation to make sure that the apparatus, when fully assembled, is suitable, can be filled with the active yeast mixture **A**, and that 10 cm<sup>3</sup> of this mixture can be sucked up using the plunger through the narrow tube into the syringe. The active yeast mixture within the apparatus should expand so that the meniscus in the narrow tube can be seen to move towards the open end of the tube. The meniscus should move a noticeable distance, but not completely fill the tube, in 20 minutes. The concentration of yeast or glucose in the

mixture can be altered if necessary to either speed up or slow down the rate of reaction so that results can be obtained over a 20 minute period. Please note on the Supervisor's Report if concentrations need to be altered in this way.

The Supervisor (**not** the Invigilator) is expected to carry out the practical aspects of **Question 1** and record their results in the space provided in the Supervisor's Report.

This must be done during the examination, using the same apparatus and reagents as the candidates, but out of sight of candidates.

## Question 2

Each candidate to be provided with:

- (i) Ruler (mm).



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This form should be completed and sent to the exam board with the scripts.

### SUPERVISOR'S REPORT

#### Cambridge Ordinary Level

#### October/November Session 2014

The Supervisor or teacher responsible for the subject should provide the following information.

- 1 Was any difficulty experienced in providing necessary materials? If so, give brief details.

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- 2 Give details of any difficulties experienced by particular candidates, giving names and candidate numbers. Reference should be made to:

- (a) difficulties with specimens or materials
- (b) accidents to apparatus or materials
- (c) any other information that is likely to assist the Examiner, especially if this cannot be discovered from the scripts.

Other cases of individual hardship, e.g. illness or disability, should be reported direct to CIE on the normal 'Special Consideration Form' as detailed in the Handbook for Centres.

- 3 During the examination, the Supervisor should, **out of sight of the candidates**, carry out **Question 1** using the same apparatus and reagents as the candidates. Results should be recorded below (**not** on a spare Question paper). The Invigilator should **not** carry out **Question 1**.

time/min	distance meniscus moved/mm	
	A	B
0	0	0
10		
15		
20		



- 4 A plan of work benches, giving details of the candidate numbers of the places occupied by the candidates for each session, must be enclosed with the scripts. The space below can be used for this, or it may be on separate paper.

**Declaration** (to be signed by the Principal)

The preparation of this practical examination has been carried out so as to maintain fully the security of the examination.

Signed .....

Name (in block capitals) .....

Centre number .....

Centre name .....

If scripts are required by CIE to be despatched in more than one envelope, it is essential that a copy of the relevant Supervisor's report and the appropriate seating plan(s) are sent inside **each envelope**.

