

**OXFORD CAMBRIDGE AND RSA EXAMINATIONS**  
**Advanced GCE**

**BIOLOGY**

**2806/03/INST**

INSTRUCTIONS for the Planning Exercise and Practical Test

To be opened immediately

Planning Exercise – for issue on or after:

Tuesday **12 NOVEMBER 2002**

Practical Test:

Thursday **23 JANUARY 2003** Morning 1 hour 30 minutes

This document is for the **Head of Centre** and for the use of the **Biology teacher and/or technician** who prepares the apparatus and materials for the examination.

It should be issued to the Biology teacher immediately it arrives at the Centre, but it **must be kept in a secure place at all times**.

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

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**These instructions consist of 5 printed pages and 3 blank pages.**

## PLANNING EXERCISE

The Planning Exercise should be issued to candidates on or after the date shown on the front of these instructions, and must be collected in on or before the date of the Practical Test. These arrangements may be made at the discretion and convenience of the Centre.

It should be recognised that each Planning Exercise makes only a small contribution to the overall assessment and candidates should therefore be guided to spend an appropriate amount of time on the work. It is suggested that they should be given between 7 and 10 days to complete it.

The mark scheme for the Planning Exercise is based closely on the coursework mark descriptors for Skill P given in the Specification and a copy of these descriptors should be made available to candidates to assist them in their work.

Candidates may be given access, if they request it, and at the discretion of the Centre, to laboratory space and facilities in order to be able to carry out preliminary work which will help in constructing their plan. However, it should be noted that the responsibility for health and safety during this period rests with the Centre, and the attention of teachers is drawn to the Health and Safety section in the Specification. Access to suitable library and other resources may also be required and, while time at home or in private study will be necessary to complete the task to a high standard, sufficient work must be completed under direct supervision to allow the teacher to authenticate the work with confidence as that of the candidates concerned. The supervising teacher should complete the statement of authentication for each candidate on the front cover page of the Plan, and details should be provided on the Report Form for the Practical Test of any assistance given to candidates.

After candidates' work has been collected, it must be kept securely until the date of the Practical Test (or must be collected on the day of the Practical Test) and must be included with the scripts for the Practical Test when these are despatched to the Examiner. Please tie together *loosely* the Planning Exercise and Practical Test for each candidate (or use a treasury tag), with the Planning Exercise on the top.

### The following notes for guidance are issued to candidates

- 1 Your plan should have a clear and helpful structure and should be illustrated by diagrams, tables, charts, graphs etc. as appropriate. Remember that these can often be used to replace words in the text. Diagrams should be relevant to the content of your plan and positioned appropriately. Labels on diagrams, flow charts or tables should be clear and concise. Large blocks of text should be included in the word count.
- 2 You should take care to use technical and scientific terms correctly and to write in clear and correct English.
- 3 Your plan should be hand-written or word-processed on A4 paper which should have a hole punched at the top left hand corner. Pages should be numbered and should have a clear margin on the right hand side. You should write (or print) on one side of the paper only and each sheet should be marked with your Centre number and Candidate number.
- 4 You should show that you have consulted an appropriate range and variety of sources. At the end of your plan you should list clearly the sources you have used and should refer to these references in your plan where appropriate. Where you have incorporated material which has been copied directly from a source such as a book or the Internet, this must be acknowledged in the report and details included in the references at the end. However, it should be noted that the inclusion of copied material will not in itself gain credit. The list of references should not be included in the word count.

- 5 Your plan should be based on the use of standard equipment, apparatus, chemicals and other materials available in a school or college science laboratory.
- 6 Your plan should be of between 500 and 1000 words. A plan which is in excess of 1000 words is likely to have poor structure and unselective choice of material, so that full credit may not be available. You should indicate the number of words in the margin of the plan at approximately 200 word intervals.
- 7 When you have finished, tie the pages *loosely* together, with this sheet on the top, so that the pages turn over freely, or use a treasury tag. Your Centre will give you the date by which it must be handed in.

If candidates wish to try out the procedure they may be provided with the following:

- 1 a potometer (a simple design involving a 30 cm length of capillary tubing fitted to a shoot by means of a short piece of polypropylene tubing is adequate)
- 2 appropriate plant material
- 3 equipment necessary to produce environmental variables.

## PRACTICAL TEST

Attention is drawn to the section on Health and Safety at the end of Appendix B of the Specification, which covers the Practical Test as well as Coursework. Centres are reminded that, in UK law, the responsibility for health and safety lies with the employer. Materials used in the examination should display appropriate hazard symbols.

### General Instructions

The Supervisor should be granted access to the question paper in advance in order to be satisfied that the apparatus provided is in accordance with these instructions and is fully suitable for the performance of the experiments. To this end, the Supervisor should perform Questions 1 and 2 and be satisfied that the candidates will be able to collect suitable results with the apparatus and materials provided.

Candidates should be informed that, if they find themselves in real difficulty, they may ask the Supervisor for assistance but that the extent of this assistance will be reported to the Examiners, who may make a deduction of marks. If the Supervisor becomes aware that a candidate is having difficulty then the Supervisor is expected to give the minimum amount of help required to enable the candidate to obtain a set of results from the apparatus. A note of the type of help given should be made on the Report Form on the last page of the candidate's script. **Under no circumstances should help be given to candidates with the presentation or analysis of experimental data.**

In cases of faulty apparatus (not arising from a candidate's mishandling) which prevents the required readings from being taken, extra time must be allowed so that the candidate has a fair opportunity of performing the experiment as though the fault had not been present. Details of such cases of time compensation should be given in the comments section on the Report Form.

If the apparatus or materials which have been provided differ significantly from these instructions, then full details of the changes must be given on the Report Form. Candidates will not be disadvantaged provided that the nature of the experiments has not been changed. Supervisors are advised to contact OCR well before the date of the examination if, for example, there are difficulties with obtaining materials or particular pieces of apparatus.

Cases of individual hardship, e.g. illness, disability, etc. should be reported direct to OCR on the 'Special Considerations' form and **not** included on the Report Form.

*Each candidate must be provided with the following apparatus and materials.*

### Question 1

Each candidate must be provided with a microscope with low power and high power objectives [e.g.  $\times 10$  ( $\frac{2}{3}$  in) and  $\times 40$  ( $\frac{1}{8}$  in)]. Each candidate must have sole use of a microscope for at least 35 minutes.

- (i) A freshly picked Broad Bean leaf in a lidded Petri dish labelled **K1**.

A supply of healthy broad bean seedlings with well-developed leaves will be necessary. **Seeds should be sown 21 days prior to use** in pots or trays containing a 5 cm depth of compost. The trays should be placed in warm, well-illuminated conditions and the compost kept moist.

- (ii) About 5 cm<sup>3</sup> of 15 % urea solution in a corked container labelled **solution A**.  
About 5 cm<sup>3</sup> of a solution of 0.175 g of sodium hydrogen carbonate and 1.0 g of magnesium sulphate in 100 cm<sup>3</sup> of distilled water in a corked container labelled **solution B**.
- (iii) Pair of fine forceps; pair of fine scissors; mounted needle; 2 clean, dry microscope slides and 4 cover slips; 2 teat pipettes; filter paper or blotting paper.

### Question 2

- (i) 40 cm<sup>3</sup> of yeast suspension, labelled as such. Use 4 g of active dried yeast to 100 cm<sup>3</sup> of water and stir thoroughly.
- (ii) About 5 cm<sup>3</sup> of 0.05% methylene blue solution, labelled as such.
- (iii) Four corked test-tubes (e.g. dimensions 12 cm  $\times$  1.4 cm with corks or bungs); rack; two beakers or tins to act as water baths; thermometer ( $^{\circ}$ C); Bunsen, tripod and gauze.
- (iv) 1 cm<sup>3</sup> and 10 cm<sup>3</sup> syringes; means of marking glassware; sight of laboratory clock.

### To be supplied by OCR

- (i) Answer books that also contain the questions.

### RETURN OF EXAMINATION MATERIALS TO OCR

**No materials to return.**

### QUESTIONNAIRE

In order to minimise the disadvantage of a practical examination at which the Examiner is not present, the teacher responsible for the examination is asked to complete the Report Form on the back cover of the script of the candidate whose name appears first on the attendance register. Further comments by teachers need only be made on those scripts where difficulties are encountered.