THIS IS A LEGACY SPECIFICATION

OCR
RECOGNISING ACHIEVEMENT

ADVANCED SUBSIDIARY GCE

BIOLOGY

2803/03/INST

Instructions for the Planning Exercise and Practical Test

To be opened immediately

Planning Exercise – for issue on or after:

MONDAY 17 NOVEMBER 2008

Practical Test: **Thursday 8 January 2009**
Morning

Duration: 1 hour 30 minutes

CUP/T75732

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.

A packet containing **two** copies of the Biology Practical Test, 2803/03/TEST, accompanies the packet containing these Instructions.

These packets should be issued to the Biology teacher immediately they arrive at the Centre, but they **must be kept in a secure place at all times.**

These documents are provided so that the Biology teacher and/or technician can ensure that the Centre's apparatus and materials are suitable for carrying out the Biology Practical Test.

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

This document consists of **8** pages. Any blank pages are indicated.

PLANNING EXERCISE

The Planning Exercise should be issued to candidates on or after the date shown on the front of this document. The candidates' Plans 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. Candidates 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 Biology Specification. 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 Biology Specification. Access to suitable library and other resources may also be required. 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. Many Centres find that this can best be managed by allowing candidates a set period of time to research the topic but requiring the Plan to be written under supervision. The supervising teacher should complete the statement of authentication for each candidate on the front cover page of the Plan. 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** (or use a treasury tag) the Planning Exercise and Practical Test for each candidate **with the Practical Test on the top**.

Guidance for Teachers/Tutors on authenticating work

The work submitted by candidates for assessment must be entirely their own.

Candidates may however:

- quote from books or any other source; this should be referenced in the work and all sources acknowledged;
- receive guidance from someone other than their teacher/tutor; the course teacher must be informed of the name of the person giving external guidance and the nature of the assistance given;
- produce work at a location away from the examination Centre provided that the work remains under the supervision of the teacher/tutor.

In cases of privately entered candidates or distance-tutored candidates, the Centre must ensure that:

- the teacher/tutor has acquainted themselves thoroughly with the general standard of candidates' work before accepting work for assessment;
- sufficient on-going regular monitoring of candidates' work has taken place.

Before authenticating work, the teacher/tutor should ask themselves the following basic questions.

- Has the **Declaration by candidate** been signed by the candidate?
- Was at least part of the work done under your direct supervision?
- Did you check the work during its production?
- Is the standard of finished work consistent with your professional judgement of the candidate's ability?

If you have answered 'YES' to the above questions you may authenticate the work.

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 handwritten 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 must 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. You 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 your Plan 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 between 500 and 1000 words. A Plan that 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 together **loosely** (or use a treasury tag), with this booklet on the top, so that the pages turn over freely. Your Centre will give you the date by which your Plan must be handed in.

PLANNING EXERCISE (continued)

Centres should be reminded that candidates only need to appreciate how to carry out an investigation in sufficient detail for them to write a plan. They do not need to carry out the investigation for themselves.

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

1 Fresh pineapple and/or kiwi fruit.

2 Gelatine powder.

As candidates may wish to add fruit or fruit extract to gelatine before it has set, they should be instructed to make this up as follows.

Dissolve 10 g of gelatine powder in 500 cm^3 hot water by sprinkling the gelatine powder on the hot water and stirring thoroughly until the gelatine has dissolved.

Do **not** boil the gelatine mixture.

Alternatively, candidates may be given molten gelatine held in a warm water bath and remove the quantities that they require.

Candidates may wish to use more or less than 10 g of gelatine per 500 cm^3 hot water to make the gel a suitable consistency. As the gelatine may take some time to set, candidates should have access to a refrigerator.

Gelatine powder is available from most supermarkets.

Gelatine powder may also be purchased from Scientific and Chemical (500 g, GE 005)

Scientific & Chemical Supplies Ltd
Carlton House
Livingstone Road
Bilston
West Midlands
W14 0QZ

Tel.:0845 1650845
Fax: 01902 402343
e-mail: customerservices@scichem.co.uk
web: www.scichem.co.uk

3 Petri dishes, test-tubes, boiling tubes, cork borers, pipettes, thermometers, beakers and spatulas.

4 Muslin or other appropriate material to filter homogenates.

5 Bunsen burners, tripods, gauzes.

6 Liquidiser, thermostatically-controlled water bath, balance.

However, candidates may wish to use other apparatus not included in this list. If they make reasonable requests for other pieces of apparatus that can be provided by the Centre, then they should have access to them.

PRACTICAL TEST

General Instructions

The attention of teachers is drawn to the details of this examination given in Appendix E of the Biology Specification.

The Biology teacher and/or technician **must** be granted access to the question paper in advance of the Practical Test in order to be satisfied that apparatus and materials are in accordance with these Instructions and are fully suitable for the performance of the experiments. To this end, the Biology teacher and/or technician should perform Questions 1 and 2 of the Practical Test and be satisfied that the candidates will be able to collect suitable results with the apparatus and materials provided. **A sample set of results, clearly labelled, should be sent to the Examiner on top of the candidates' scripts**.

The Biology teacher and/or technician should also check **all** the slides supplied by OCR prior to the examination.

If the apparatus or materials that are provided to candidates 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. **The Biology teacher and/or technician is strongly advised to contact OCR well before the date of the examination if, for example, there are difficulties with obtaining and/or using materials or particular pieces of apparatus**.

Candidates should be informed that, if they find themselves in real difficulty, they may ask the invigilator for assistance, but the extent of this assistance will be reported to the Examiner, who may make a deduction of marks. If the invigilator becomes aware that a candidate is having difficulty, then the invigilator 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 **must** 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**.

Where a candidate is unable to collect any results for an experiment, or the results obtained do not allow the candidate to proceed to answer the questions which follow on the examination paper, the invigilator may consider whether to issue sample results to the candidate. The sample results given should be those produced by the centre during the trialling of the experiment before the day of the examination and should not be formatted.

In such cases the invigilator must be confident that:

- the difficulties experienced by the candidate are not due to the candidate's failure to follow the instructions given, or to carry out the procedures safely and skilfully;
- the candidate has been given an appropriate opportunity to collect his/her own results using the instructions on the examination paper before being given the sample results;
- the sample results provided will enable the candidate to proceed to answer the questions which follow on the examination paper.

The invigilator must write to the Qualification Manager for Biology at OCR as soon as possible after the examination has taken place, detailing the circumstances and the candidate(s) concerned, enclosing the sample results provided and giving the above assurances. Centres are reminded that appropriate deductions of marks may be made in such cases.

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 section (**c**) on the Report Form.

Cases of individual hardship, e.g. illness, should be reported directly to OCR by the Examinations Officer using the Special Consideration form and **must not** be included on the Report Form. Access Arrangements must be applied for by the deadlines issued by the Joint Council.

Health and Safety

Attention is drawn to the section on Health and Safety in Appendix B of the Biology Specification. This section covers Practical Tests 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.

If microscopes are shared, some candidates must start with Question 2.

Each candidate must be provided with the following apparatus and materials:

Question 1

(i) 20 cm^3 of 10% and 20 cm^3 of 1% betalain solutions.

These should be prepared as follows:

- peel and cut up 200 g of raw, uncooked beetroot
- liquidise with 100 cm^3 of tap water
- filter the homogenate through several layers of muslin.

This is a 100% betalain stock solution, which can be used to prepare 10% and 1% betalain solutions as follows. *Quantities in the following procedures can be scaled up according to the number of candidates.*

1 cm^3 of the stock solution should be used to make a 10% solution as follows:

- add 1 cm^3 of stock solution to 9 cm^3 tap water.

This should be provided to the candidates in a 100 cm^3 beaker (or other suitable container) labelled **10% betalain solution**.

1 cm^3 of the 10% betalain solution should be used to make a 1% solution as follows:

- add 1 cm^3 of 10% betalain solution to 9 cm^3 tap water.

This should be provided to the candidates in a 100 cm^3 beaker (or other suitable container) labelled **1% betalain solution**.

Freshly prepared betalain solutions are recommended for this procedure. However, if centres wish to store the solutions overnight in the refrigerator or at room temperature, they are strongly recommended to test that the solutions are not adversely affected following storage (well in advance of the examination).

(ii) 60 discs of raw, uncooked beetroot tissue, provided in petri-dishes (or other suitable container).

The discs should be prepared as follows:

- use a size 6 cork borer (or similar) to make several cores of beetroot tissue (the direction is not important and depends on the size of the individual beetroot);
- trim the ends of the cores so that they are at right angles (there is need to peel the beetroot before making the cores);
- cut the cores into discs that are **approximately 3 – 5 mm** in thickness;
- wash the discs thoroughly in cold tap water until the rinsing water is almost colourless. This may be done using several changes of tap water or by running water from a tap into a container with the discs and letting the waste water drain away.
- place the discs into a suitable container with sufficient water to cover the discs until required. Cover the container with clingfilm if storing overnight.
- before supplying the discs to the candidates, pour away any excess water.

(iii) Six specimen tubes (or suitable alternatives) labelled **R.T.** (**room temperature**), **40**, **50**, **60**, **70** and **80**. These should be flat bottomed and of sufficient width to ensure that the discs are covered in steps **4**, **5** and **6**.

(iv) Six test-tubes (e.g. 125 mm × 16 mm) labelled **10.0**, **5.0**, **1.0**, **0.5**, **0.1** and **0.0** in a test-tube rack. These test-tubes should be used for step **1**.

(v) Six test-tubes (e.g. 125 mm × 16 mm) labelled **R.T.** (**room temperature**), **40**, **50**, **60**, **70** and **80** in a test-tube rack. These test-tubes should be used for step **7**.
Note: all test-tubes provided to each candidate must be of the same bore/width.

(vi) Approximately 100 cm^3 of tap water at room temperature, provided in a beaker labelled **room temperature** (or **R.T.**).

(vii) Bunsen burner, tripod and gauze.

(viii) Approximately 250 cm^3 of water in a container labelled **water.**
Note: the water is for candidates to prepare the betalain standard solutions in step **1** of the procedure and to rinse the discs in steps **3**, **5** and **6** of the procedure.

(ix) Thermometer (–10 °C to 110 °C), three 10 cm^3 syringes, one 1 cm^3 syringe, blunt forceps.

(x) A suitable container labelled **waste**.

(xi) Stopwatch, stop clock or bench timer.

(xii) A piece of plain white paper to help determine colour intensity.

(xiii) Paper towels.

Candidates should obtain suitable results if the room temperature is about 20 °C. If the temperature of the laboratory is likely to be significantly lower than 20 °C, the water said to be at "room temperature" should be provided at about 20 °C, and candidates may be provided with appropriate apparatus to maintain the temperature in step **4** of the procedure.

Question 2

(i) A microscope with low, medium and high power objective lenses. Each candidate must have sole use of a microscope for at least 35 minutes.

(ii) Slide **K1** from OCR.

RETURN OF EXAMINATION MATERIALS TO OCR

Please read the following instructions carefully.

Immediately after the examination the slides must be returned to OCR in the containers in which they were received, using the self-adhesive labels for the parcel. They must not be included in parcels of scripts.

Please indicate clearly your Centre number when returning slides.

Slides and containers not returned in good condition will be charged at the rate of £3 per item.

The address for the return of slides is:

Ian Couchman
Cambridge Assessment DC10
Hill Farm Road
Whittlesford
CAMBRIDGE
CB22 4FZ

On occasion, it may be possible for OCR to offer certain slides used in the examination for sale to Centres. Please contact Ian Couchman at the above address for details.