

**Advanced GCE**

## F216

**BIOLOGY**

Unit F216: Practical Skills in Biology 2  
Evaluative Task

**Specimen Task**

**For use from September 2008 to June 2009**

**All items required by teachers and candidates for this task are included in this pack.**

**INFORMATION FOR CANDIDATES**

- Practical Skills in Biology 2: Evaluative Task

**INFORMATION FOR TEACHERS**

- Mark scheme.
- Instructions for Teachers and Technicians.

SPECIMEN

**Advanced GCE**

**BIOLOGY**

Unit F216: Practical Skills in Biology 2  
Evaluative Task

**Specimen Task**

**For use from September 2008 to June 2009.**

Candidates answer on this task sheet.

## F216

### INSTRUCTIONS TO CANDIDATES

- Answer **all** parts of the task.

### INFORMATION FOR CANDIDATES

- The total number of marks for this task is **20**.

### ADVICE TO CANDIDATES

- Read each part carefully and make sure you know what you have to do before starting your answer.

| FOR TEACHER'S USE |      |      |
|-------------------|------|------|
|                   | Max. | Mark |
| TOTAL             | 20   |      |

|       | Max. | Mark |
|-------|------|------|
| TOTAL | 20   |      |

This task consists of **8** printed pages.

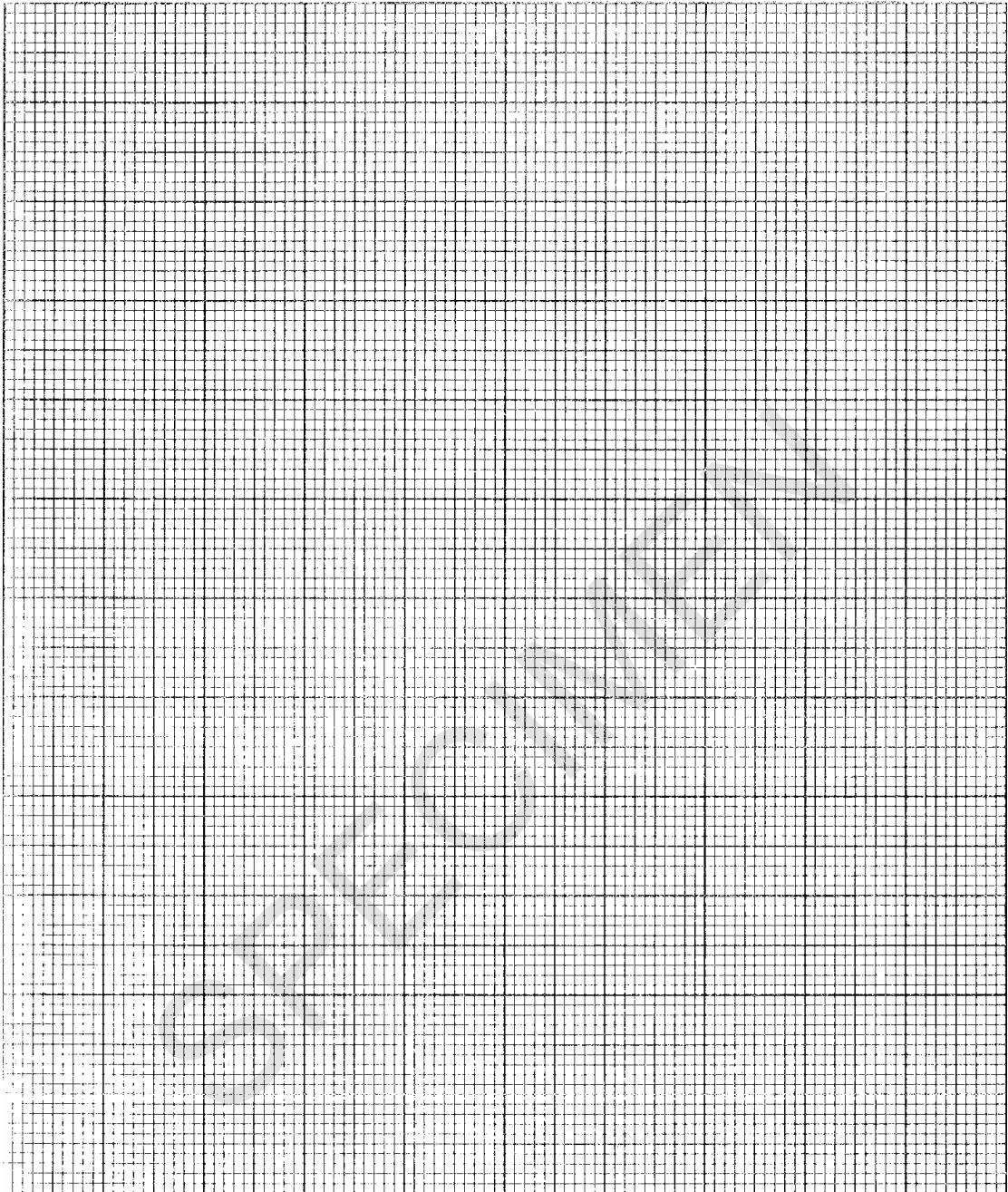
You collected data that can be used to investigate the effect of different carbohydrates on the respiration rate of yeast.

You have been supplied with raw data collected using the same data collection strategy you used in Quantitative Task 1.

- 1 (a) Process the raw data in the most suitable way and record it in the space below.

SPECIMEN

(b) Plot a suitable graph on the grid provided.



[Turn Over

**(c)** Use the processed data and graph to describe the trends and patterns in the processed data.

.....

.....

.....

.....

**(d)** Outline the conclusions that can be made from the processed data.

.....

.....

.....

.....

.....

.....

.....

**(e)** Describe further processing that you could carry out on the data to give further support to your conclusions.

.....

.....

.....

**(f)** Explain the likely cause(s) of the trend you described in part **(c)** and explain why there are differences in the rates of respiration when using different carbohydrates.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

SPECIMEN

[Turn over

2 (a) State three possible limitations of the data collection strategy that you used and explain the effect of each limitation on the precision and accuracy of the raw data collected.

Limitation:.....

Effect:.....

.....

.....

Limitation:.....

Effect:.....

.....

.....

Limitation:.....

Effect:.....

.....

.....

SPECIMEN



- (b) Explain how you could modify and extend the data collection strategy you used to eliminate **each** of the limitations you describe above so that you would produce more valid results.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

- 3 Assess the validity of the conclusions that you have drawn using the raw data you have been presented with.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

**Total [20]**

**END OF TASK**

SPECIMEN

*Copyright Acknowledgements:*

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (OCR) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest opportunity.

OCR is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.

Unit F216: Practical Skills in Biology 2: Evaluative Task

**Specimen Mark Scheme**

The maximum mark for this paper is **20**.

**For use from September 2008 to June 2009.**

SPECIMEN

| Question Number | Answer  | Max Mark                               |
|-----------------|---|--|
| 1(a)            | mean rates correctly calculated from the set of data provided ;<br>recognition of anomalous results and suitable action taken ;   | [1]<br>[1]                             |
| (b)             | appropriate bar chart drawn<br><br><i>deduct one mark for each of the following done incorrectly</i><br>axes correct ;<br>axes have appropriate scales and labels ;<br>bars plotted accurately ;  | [3]                                    |
| (c)             | trend described correctly   | [1]                                    |
| (d)             | <i>valid conclusions drawn from processed data</i><br>glucose produces fastest rate, starch slowest ;   | [1]                                    |
| (e)             | calculate standard deviation ;  | [1]                                    |
| (f)             | <i>any four from:</i><br>need to activate genes to produce enzymes ;<br>more 'processing' required before entry into glycolysis ;<br>disaccharides / polysaccharides must be broken down into glucose ;<br>transport into cell ;            | [4]                                    |
|                 | <b>Total:</b>   | <b>[12]</b>                            |
| 2(a)            | <i>any three limitations with appropriate effect</i><br>gas lost through connections <b>so</b> volume measured is not volume actually generated ;   | [3]                                    |
| (b)             | <i>any suitable improvement to limitation given in 2(a):</i><br>use thermostatically controlled water bath to regulate temperature ;<br>use apparatus that allows water to be added after tubes connected and sealed ;<br>use gas syringe ; | [3]                                    |
| 3               | <i>shows understanding of validity (accuracy + precision + reliability)</i><br>are raw data values close together?<br>insufficient raw data collected<br>inconsistent temperatures  | [2]<br><br><b>Total</b><br><b>[20]</b> |

Unit F216: Practical Skills in Biology 2: Evaluative Task

**Instructions for Teachers and Technicians**

**For use from September 2008 to June 2009**

SPECIMEN

**This task relates to Module 4, Unit F214. There is no time limit but it is expected that it can be completed within one timetabled lesson.**

It is assumed that you will have completed the teaching of the above module before setting your students this task. This module has links to other modules which contain related learning experiences – please refer to your specification.

Candidates may attempt more than one evaluative task with the best mark from this type of task being used to make up the overall mark for Unit F216.

### **Preparing for the assessment**

It is expected that before candidates attempt Practical Skills in Biology 2 (Unit F216) they will have had some general preparation in their lessons. They will be assessed on a number of qualities such as demonstration of skilful and safe practical techniques using suitable qualitative methods, the ability to make and record valid observations, and the ability to organise results suitably. It is therefore essential that they should have some advance practice in these areas so that they can maximise their attainment.

### **Preparing candidates**

At the start of the task the candidates should be given the task sheet.

Candidates must work on the task individually under controlled conditions with the completed task being submitted to the teacher at the end of the lesson. Completed tasks should be kept under secure conditions until results are issued by OCR.

Candidates should not be given the opportunity to redraft their work, as this is likely to require an input of specific advice. If a teacher feels that a candidate has under-performed, the candidate may be given an alternative task. In such cases it is essential that the candidate be given detailed feedback on the completed assessment before undertaking another Evaluative Task. Candidates are permitted to take each task **once** only.

### **Assessing the candidate's work**

The mark scheme supplied with this pack should be used to determine a candidate's mark out of a total of 20 marks. The cover sheet for the task contains a grid for ease of recording marks. To aid moderators it is preferable that teachers mark work using red ink, including any appropriate annotations to support the award of marks.

### **Notes to assist teachers with this task**

Teachers must trial the task before candidates are given it, to ensure that the apparatus, materials, chemicals etc provided by the centre are appropriate. The teacher carrying out the trial must complete a candidate's task sheet showing the results attained, and retain this, clearly labelled, so that it can be provided to the moderator when requested.

### **Health and Safety**

Attention is drawn to Appendix E of the specification