

Advanced Subsidiary GCE

F213

BIOLOGY

Unit F213: Practical Skills in Biology 1
Qualitative 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 1: Qualitative Task

INFORMATION FOR TEACHERS

- Mark scheme.
- Instructions for Teachers and Technicians.

SPECIMEN

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Candidates answer on this task sheet.

INSTRUCTIONS TO CANDIDATES

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

INFORMATION FOR CANDIDATES

- The total number of marks for this task is **10**

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	10	

	Max.	Mark
TOTAL	10	

This task consists of **5** printed pages and **1** blank page.

[Turn Over

Bananas are hard, dry fruits that become soft and moist as they ripen. Dieticians inform us that it is better to eat unripe fruit as they have a lower GI index than ripe fruit.

Your task is to investigate the effect of banana ripeness on the starch and glucose content of bananas at different stages of ripeness. It is your responsibility to work safely and to organise your time effectively.

Read the procedure carefully before you start and decide upon a suitable format to record your observations.

Procedure:

You are provided with bananas at five stages of ripeness.

Remove the skin of the **unripe** banana and cut **two**, 1 cm thick slices from it.

Carry out Test **A** on one piece and Test **B** on the other.

Test A

- 1 Place one piece of unripe banana into a clean pestle and mortar and crush lightly.
- 2 Use the spatula to move the banana onto a watch glass.
- 3 Cover with iodine solution and record the colour in the most suitable format in the space provided on the following page.

Test B

- 1 Use the second piece of unripe banana, crush in the pestle and mortar as before.
- 2 Place the paste into a boiling tube using the spatula.
- 3 Add 5cm³ of Benedicts solution and stir to mix the contents.
- 4 Heat in a boiling water bath for **two** minutes.
- 5 Remove the tube from the water bath and place in a boiling tube rack.
- 6 Stir carefully and record the colour of the tube immediately after stirring in the most suitable format in the space provided on the following page.

Repeat Tests **A** and **B** on 1 cm thick slices from the other four bananas.

Observations

(a) Why was it important to stir the stir the contents of the tube in step 6 of Test B?

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.....

(b) Why was it important to record the colour of the contents of the tube immediately after stirring in step 6 of Test B?

.....
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.....
.....

[Turn over

Explain what the results from Test **A** and Test **B** indicate about the changes that have taken place in the bananas as they have ripened.

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Total [10]

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END OF TASK

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Unit F213: Practical Skills in Biology 1: Qualitative Task

Specimen Mark Scheme

The maximum mark for this task is **10**.

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	Mark
(a) to mix the contents thoroughly to ensure maximum reactivity ;	[1]
(b) to ensure that all measurements were recorded at the same time (control) ;	[1]
qualitative observations of colour changes made using more than single words ;	[1]
observations recorded logically and in a format that allows comparisons to be made ;	[1]
clear statement made that as the banana ripens, there is a weaker iodine reaction (less dark) and a 'stronger' Benedict's reaction (green => orange/red) ;	[2]
clear statement that concentration of starch is decreasing and concentration of (reducing) sugar is increasing ;	[2]
clear statement that starch is being converted into sugar / glucose ;	[1]
detail of the conversion e.g. by enzyme ;	[1]
Total	[10]

SPECIMEN

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This task relates to Module 1, Unit F212. 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 qualitative task with the best mark from this type of task being used to make up the overall mark for Unit F213.

Preparing for the assessment

It is expected that before candidates attempt Practical Skills in Biology 1 (Unit F213) 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 Qualitative 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 10 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.

Teacher / technician guide

Each student will require:

Materials:

- Bananas, at each of five different stages of ripeness.

The stages must range from very green (inedible) to very ripe (brown skin).

Each student will require an approximately 5 cm length of each banana.

The bananas must be labelled or presented on labelled watch glasses.

- 50cm³ fresh iodine in potassium iodide solution in a beaker labelled **iodine solution**.
- 50cm³ fresh Benedict's solution in a beaker labelled **Benedict's solution**.

Apparatus:

- Safety spectacles
- Kettle or water bath (or other supply of boiling water)
- Knife and white tile
- 5 watch glasses
- 5 boiling tubes
- Boiling tube rack
- Spatula
- Pestle and mortar
- One 5 cm³ syringe
- 2 stirring rods
- Test tube holder
- Laboratory paper, to dry pestle and mortar
- Stop watch

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