

New
Specification



Rewarding Learning

General Certificate of Secondary Education
2012–2013

Double Award Science: Biology

Unit B1

Foundation Tier

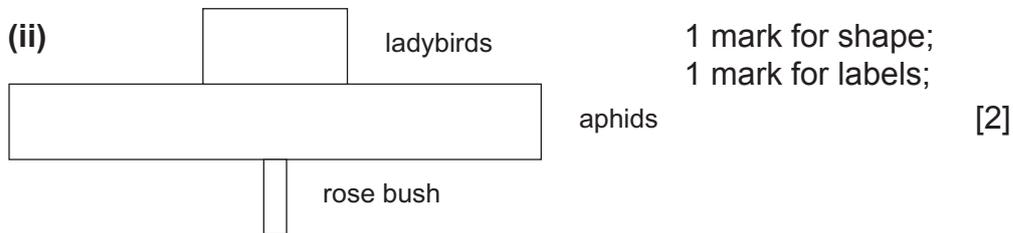
[GSD11]

MONDAY 12 NOVEMBER 2012

1.30 pm–2.30 pm

**MARK
SCHEME**

- 1 (a) Living organisms [1] plus the abiotic/non-living/physical environment [1] [2]
- (b) (i) Sun/sunlight [1]
- (ii) Tree [1]
- (iii) Aphid/worm/caterpillar/blackbird [1]
- (iv) Third trophic level/trophic level 3 [1]



- (d) Any **two** from:
- (blackbird) loses **heat**/energy in **respiration**
 - (blackbird) loses energy in **movement**
 - (blackbird) loses energy in **excretion/waste**
 - **reproduction**
 - not all blackbird **is/can be eaten**
- [2]

| AVAILABLE MARKS |
|-----------------|
| 12 |

- 2 (a) As the area sampled increases, more species recorded [1]
then graph levels off/no more species found [1] [2]
- (b) 6 [1]
- (c) (i) Any **three** from:
- use quadrats
 - which are randomly placed/throw quadrat
 - count number of plant **species**
 - repeat (for reliability)
 - use a key
 - divide number of plant species by number of quadrats [3]
- (ii) More light/more room [1]

AVAILABLE
MARKS

7

- 3 (a)

| | | | |
|---------|---------|------|-------|
| Fat | Ethanol | | White |
| Protein | Biuret | Blue | |

 [4]
- (b) Energy intake/food intake is higher/too much food eaten/junk food/
availability of cheap/junk food/cheap alcohol [1] [2]
Not enough exercise/sedentary lifestyle described [1] [2]
- (c) sodium/salt/fat/cholesterol [1] [2]
glucose/sugar [1] [2]
- (d) (i) **Indicative Content:**
- Place DCPIP in test-tube
 - Add drops of juice to the DCPIP
 - Shake/mix
 - Count the number of drops of juice (needed to produce colour change in the DCPIP)
 - DCPIP goes colourless/clear or changes from blue to clear or changes from blue to pink/clear
 - Repeat for the other orange juice
 - The fewer the drops of juice needed the more vit. C or converse – more drops needed the less vit. C present (one that changes the fastest has most vit. C)
 - Repeat for reliability – same juice several times
 - Controlled variable – same amount of mixing/shaking – or same volume of DCPIP in both test-tubes

| Band | Response | Mark |
|------|--|---------|
| A | Candidates must use appropriate specialist terms throughout using at least 5 of the above points (which must include a controlled variable) to describe in a logical sequence how they would compare the amounts of vitamin C in freshly squeezed orange juice and processed orange juice. They use good spelling, punctuation and grammar and the form and style are of a high standard. | [5]–[6] |
| B | Candidates must use some appropriate specialist terms throughout using 3 or 4 of the above points to partially describe how they would compare the amounts of vitamin C in freshly squeezed orange juice and processed orange juice. They use satisfactory spelling, punctuation and grammar and the form and style are of a satisfactory standard. | [3]–[4] |
| C | Candidates describe using 1 or 2 of the above points how they would compare the amounts of vitamin C in freshly squeezed orange juice and processed orange juice. However, these are not presented in a logical sequence. They use limited spelling, punctuation and grammar and they have made little use of specialist terms. | [1]–[2] |
| D | Response not worthy of credit | [0] |

[6]

AVAILABLE
MARKS

| | | AVAILABLE MARKS |
|--|-----|-----------------|
| (ii) More accurate determination of volume/size of drops can be variable | [1] | 15 |
| 4 (a) Any two from: • respiration/energy • starch • sucrose • cellulose • amino acids/protein/oils | [2] | |
| (b) 1. 30 2. 25°C | [2] | |
| (c) Enzymes broken down destroyed/damaged/denatured [1] Enzyme not correct shape (to fit substrate) [1] | [2] | |
| (d) Leaves absorb less light /less CO ₂ absorbed [1] So less photosynthesis [1] | [2] | 8 |

| | | AVAILABLE MARKS |
|---|--|---|
| 5 | <p>(a) (Large surface area allows) more oxygen to pass in/more gas exchange/more carbon dioxide to leave [1] Gases need to be dissolved in moisture [1]</p> <p>(b) Any two from:</p> <ul style="list-style-type: none"> • thin/short distance/one cell thick/thin wall • permeable • good blood supply/lots of capillaries/blood near alveoli • diffusion gradient or described | <p>[2]</p> <p>[2]</p> <p>4</p> |
| 6 | <p>(a) Place where an animal or plant is found/lives</p> <p>(b) 1. Pitfall trap [1] 2. Sweep net/net [1]</p> <p>(c) Vegetation figure correctly plotted [1] Air figure correctly plotted and shaded [1]</p> <p>(d) Spiders</p> <p>(e) Any three from:</p> <ul style="list-style-type: none"> • less insects/food • for chicks to feed on • so population decreases • fewer breeding adults as chicks do not survive to adults | <p>[1]</p> <p>[2]</p> <p>[2]</p> <p>[1]</p> <p>[3]</p> <p>9</p> |
| 7 | <p>(a) $-6.8/-7\% =$ [2]</p> <p>(b) Decreasing (emissions)</p> <p>(c) Any three from:</p> <ul style="list-style-type: none"> • While renewable does not produce carbon dioxide • Does not contribute to global warming • The cost of producing electricity is far greater than the non-renewables • People not prepared to pay the extra cost | <p>[2]</p> <p>[1]</p> <p>[3]</p> <p>6</p> |

- 8 (a) Any **two** from:
- they break down/starch/fat/protein/food
 - from large to small molecules/named correctly
 - from insoluble to soluble molecules
 - so that these can be absorbed/taken into the bloodstream
 - Biological catalyst/speed up reactions

[2]

- (b) (i) Long/large surface area [1]

only allow
large surface
area once

- (ii) Has villi/microvilli/good blood supply/walls only one cell thick/
lacteals/folds/large surface area/folded/permeable/
semi-permeable/short diffusion distance [1]

- (c) (i) **Tube A** Any **two** from:
- (amylase) breaks down starch (into glucose)
 - sugar/glucose passes through pores of Visking tubing/into water/solution/boiling tube
 - Benedict's turns **from blue** to brick red

[2]

Tube B Any **two** from:

- amylase does not break down the starch
- enzyme is destroyed/damaged (by boiling)
- negative result for Benedict's/remains blue/no colour change
- no glucose present

[2]

- (ii) Enzyme specificity/lock and key fit/protease doesn't break down starch/only breaks down protein/only amylase breaks starch/
starch doesn't fit protease/no substrate for protease [1]

[1]

TotalAVAILABLE
MARKS

9

70