New Specification

Rewarding Learning

General Certificate of Secondary Education
2012–2013

Double Award Science: Biology

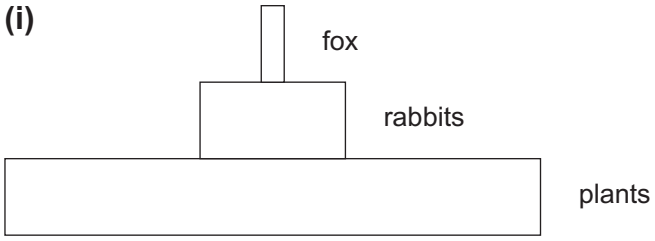
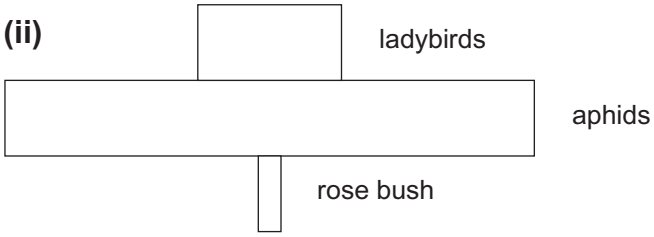
Unit B1

Foundation Tier

[GSD11]

MONDAY 12 NOVEMBER 2012
1.30 pm–2.30 pm

MARK SCHEME

			AVAILABLE MARKS
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]	
	(c) **(i)** 	1 mark for shape; 1 mark for labels [2]	
	(ii) 	1 mark for shape; 1 mark for labels; [2]	
	(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]	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

AVAILABLE MARKS

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
Not enough exercise/sedentary lifestyle described [1] [2]

(c) sodium/salt/fat/cholesterol [1]
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
	(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	**(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]	[2]	
	(b)	Any **two** from: • thin/short distance/one cell thick/thin wall • permeable • good blood supply/lots of capillaries/blood near alveoli • diffusion gradient or described	[2]	4
6	**(a)**	Place where an animal or plant is found/lives	[1]	
	(b)	1. Pitfall trap [1] 2. Sweep net/net [1]	[2]	
	(c)	Vegetation figure correctly plotted [1] Air figure correctly plotted and shaded [1]	[2]	
	(d)	Spiders	[1]	
	(e)	Any **three** from: • less insects/food • for chicks to feed on • so population decreases • fewer breeding adults as chicks do not survive to adults	[3]	9
7	**(a)**	–6.8/–7% = [2]	[2]	
	(b)	Decreasing (emissions)	[1]	
	(c)	Any **three** from: • 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	[3]	6

		AVAILABLE MARKS
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]	9
	Total	**70**