



Rewarding Learning

General Certificate of Secondary Education
2011–2012

Double Award Science: Biology

Unit B1

Foundation Tier

[GSD11]

TUESDAY 8 NOVEMBER 2011

9.30 am–10.30 am

**MARK
SCHEME**

			AVAILABLE MARKS
1	(a) (i)	light coming from one side – not above; tip bent towards the light	[2]
	(ii)	2 cells drawn, one bigger than the other, near top; bigger cell on side away from light	[2]
	(b)	auxin	[1]
2	(a) (i)	order D B C E A	[1]
	(ii)	remove chlorophyll/decolourise/remove green colour	[1]
	(iii)	alcohol flammable	[1]
	(b) (i)	yellow/brown;	[1]
	(ii)	blue/black;	[1]
	(iii)	yellow/brown	[1]
		for (b) accept either colour on its own	
3	(a) (i)	(organic compounds) in plants/glucose/starch	[1]
	(ii)	respiration not decomposition	[1]
	(iii)	Any two from:	
		• protein	
		• sugar or glucose	
		• sucrose	
		• starch	
		• cellulose	
		• chlorophyll	
		• lipids or fat	
		• vitamins	
		not minerals	[2]
	(b) (i)	energy, transport and agriculture	[1]
	(ii)	decreases from 1990–2006/increases from 2006 to 1990; exceptions transport and energy (both needed)	[2]
	(iii)	increased use of transport/increased energy consumption/ removal of forests	[1]
	(iv)	so that know what the levels are/see changes/so that can regulate/to meet targets/global warming	[1]
	(v)	floods/coastal erosion/arctic ice melts/changing weather patterns; too hot/too cold/too wet/drought/too stormy – for current plant growth	[1]
			11

- 4 (a) (i) E2 [1]
- (ii) P1; and P4 [2]
- (iii) Lock and key [1]
- (b) Indicative content
- A:
- lipase has broken down fats/lipase reacts with fat;
 - fatty acids produced;
 - lower pH/acidic (**not** pH5 on its own)
- B:
- heat has denatured the enzyme/lipase; (*not killed enzyme*)
 - fats not broken down/no fatty acids produced;
 - pH stays same (**not allow** pH is neutral on its own, **not** pH7)
- C:
- no lipase present/no enzymes present
 - fats not broken down/no fatty acids produced;
 - pH stays the same as start – (but only award once in B or C **not both, not** pH7) [6]

AVAILABLE
MARKS

10

Response	Mark
Candidates must use appropriate specialist terms throughout to describe the results they would expect and account for the results, using at least 5 of the above points in a logical sequence. They use good spelling, punctuation and grammar and the form and style are of a high standard.	5–6
Candidates must use some appropriate specialist terms to describe the results they would expect and partially account for these results, using at least 3 of the above points in a logical sequence. They use satisfactory spelling, punctuation and grammar and the form and style are of a satisfactory standard.	3–4
Candidates describe one of the results they would expect or account for one of these results, using at least one of the above points. However, these may not be presented in a logical sequence. They use limited spelling, punctuation and grammar and they have made little use of specialist terms.	1–2
Response not worthy of credit.	0

	AVAILABLE MARKS
5 (a) (i) 90 mg/100 ml [1] (ii) eaten meal; bigger meal/more sugar in lunch than breakfast/ bigger meal [2]	
(b) (i) insulin is involved in control; and conversion of glucose to glycogen/stored as glycogen; this lowers blood glucose levels. [3] max [3]	
(ii) Any two from: • high blood glucose • glucose in urine • lethargy • thirst • coma • frequent toilet visits • weight loss [2]	
(c) (i) nervous [1]	
(ii) muscle [1]	
(iii) CNS/spinal cord [1] (not brain)	
(iv) pin/nervous – faster/blood glucose slower; method of transmission – nerves and hormones in blood; response in nerves is specific to one site/response in hormones may have several sites. [2]	13
6 (a) (i) Scale on x axis written in; Scale on y axis written in; (more than $\frac{1}{2}$ axis used) 6 points all correctly plotted; Straight line joins points; (line must not start at origin) [4]	
(ii) 0.05% [1]	
(iii) Lower than optimum (higher than when grown at higher or lower levels of CO ₂)/grows faster at 0.05 [1]	
(b) (i) Amount of soil/water/minerals/temperature/sunlight/amount of solution [1] (not time, not CO ₂)	
(ii) CO ₂ would be depleted/run out/used up [1] (not water run out, not allow plant too big)	
(iii) Plants have photosynthesised/fixed CO ₂ ; then produced sugars/ starch/protein/other organic compounds [2] (not food, not grow)	10

- 7 (a) (i) more species in quadrats in area A than B [1]
- (ii) light/water level/pH levels/type of soil/mineral levels/rain/temperature [1]
- (b) Indicative content
- set out (belt) transect/line/or put down tape measure;
 - use quadrats;
 - identify plant species;
 - use a key (to identify species);
 - count the number of (different) species in each quadrat;
 - repeat at (5 m) intervals across the transect;
 - work out the average/mean;
 - record/write results down; [6]

Response	Mark
Candidates must use appropriate specialist terms throughout to describe how they would have carried out this investigation and explain how the pupils would have obtained these results, using at least 5 of the above points in a logical sequence. They use good spelling, punctuation and grammar and the form and style are of a high standard.	5–6
Candidates must use some appropriate specialist terms throughout to describe how they would have carried out this investigation and partially explain how the pupils would have obtained these results, using at least 3 of the above points in a logical sequence. They use satisfactory spelling, punctuation and grammar and the form and style are of a satisfactory standard.	3–4
Candidates describe how they would have carried out the investigation, using at least 1 of the above points. However these may be presented in a logical sequence. They use limited spelling, punctuation and grammar and they have made little use of specialist terms.	1–2
Response not worthy of credit.	0

- (c) (i) plants at bottom and widest bar labelled;
rest in correct order and progressively smaller bars; [2]
Allow [1] for all labels correct but triangle drawn.
- (ii) animals move/animals, e.g. aphids small and difficult to count [1]
- (d) (i) 5 [1]
- (ii) $5 \times 4 = 20$ [1]
apply CM

AVAILABLE
MARKS

(iii) Any **two** from:

- colder
- wetter
- more predators
- plants died or aphids died
- disease

[2]

Total

AVAILABLE
MARKS

15

70