



*Rewarding Learning*

**General Certificate of Secondary Education  
2012**

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**Biology**

Unit 1  
Foundation

**[GBY11]**

**WEDNESDAY 30 MAY, AFTERNOON**

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**MARK  
SCHEME**

- 1 (a) A – Eyepiece (lens); [1]  
B – Stage; [1]
- (b) See more cells/wider field of view/no damage to slide; [1]
- (c) Adjust light; [1]
- 2 (a) A – Liver; [1]
- (b) Protease (enzyme); **Accept:** pepsin [1]  
(Hydrochloric) acid; [1]
- (c) Large surface area/long; [1]
- 3 (a) E; [1]  
A; [1]  
B; [1]
- (b) Pectoral fin not as wide as body; [1]
- (c) Size changes/fish grow/not all fish of the same species are the same size; [1]
- 4 **Indicative content**
- 1 Contraction of intercostal muscles;
  - 2 Ribs move up and out;
  - 3 Contraction of diaphragm (muscle);
  - 4 (Diaphragm) flattens/moves down;
  - 5 Increased chest/lung volume;
  - 6 Reduced lung pressure;

AVAILABLE  
MARKS

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Response	Marks
Candidates must use appropriate specialist terms throughout to describe the mechanism of breathing using <b>at least 4</b> of the above points. They use <b>good</b> spelling, punctuation and grammar and the form and style are of a <b>high</b> standard.	[5]–[6]
Candidates use some appropriate specialist terms throughout to describe the mechanism of breathing using <b>at least 3</b> of the above points. They use <b>satisfactory</b> spelling, punctuation and grammar and the form and style are of a <b>satisfactory</b> standard.	[3]–[4]
Candidates make little use of specialist terms throughout to describe the mechanism of breathing using <b>at least 1</b> of the above points. The spelling, punctuation and grammar, form and style are of a <b>limited</b> standard.	[1]–[2]
Response not worthy of credit.	[0]

[6]

6

5 (a)

Reagent;		Colour after (food) tests;
		Blue-black;
	Blue;	
		Purple;
Ethanol;		

[6]

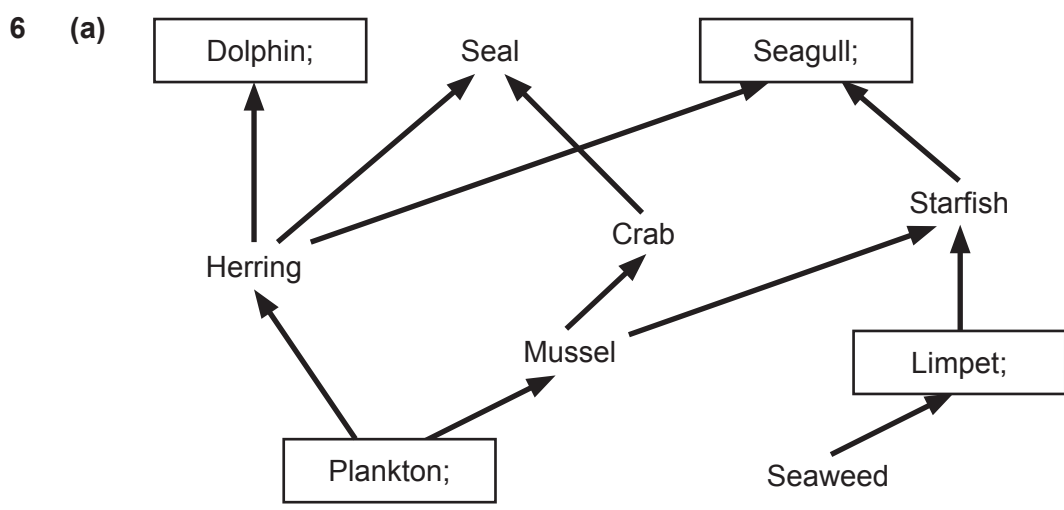
(b) (i) A and C;

[1]

(ii) B;

[1]

8



[4]

(b) Capture sunlight energy/photosynthesis;  
Make it available to others in the food chain;

[1]

[1]

(c) Fewer crabs;  
Seals have less food;

[1]

[1]

8

- 7 (a) (i) Lock and key; [1]
- (ii) **Stage 2 drawing shows** – Enzyme-substrate complex; [1]  
**Stage 3 drawing shows** – Substrate divided into two product molecules;  
**Accept:** vertical/horizontal division of substrate [1]
- (iii) Released to be used again; **Accept:** Not broken down [1]
- (b) (i) B; [1]  
Shortest time to make mint go soft/for storage; [1]
- (ii) Any **two** from:  
• temperature;  
• pH;  
• softness of mint at the end; [2]

- 8 (a) **Indicative content:**
- 1 Known/same volume;
  - 2 DCPIP;
  - 3 Measure **volume** of orange juice needed
  - 4 to decolourise DCPIP/colour change described/blue to (pink) colourless.  
**Accept:** Addition of DCPIP to juice
  - 5 Measure volume of 1 week old orange juice needed to decolourise same volume of reagent/DCPIP;
  - 6 Repeat 3 times;
  - 7 Calculate average;

Response	Marks
Candidates must use appropriate specialist terms throughout to describe measuring vitamin C content using <b>at least 5</b> of the above points. They use <b>good</b> spelling, punctuation and grammar and the form and style are of a <b>high</b> standard.	[5]–[6]
Candidates use some appropriate specialist terms throughout to describe measuring vitamin C content using <b>at least 3</b> of the above points. They use <b>satisfactory</b> spelling, punctuation and grammar and the form and style are of a satisfactory standard.	[3]–[4]
Candidates make little use of specialist terms throughout to describe measuring vitamin C content using <b>at least 1</b> of the above points. The spelling, punctuation and grammar, form and style are of a <b>limited</b> standard.	[1]–[2]
Response not worthy of credit.	[0]

[6]

AVAILABLE  
MARKS

8

			AVAILABLE MARKS
(b) (i)	0.4;	[1]	17
(ii)	Carton blackcurrant; Widest range/described;	[1] [1]	
(iii)	Labels on x-axis; Accurate plots (× 2)	[1] [2]	
(iv)	More vitamin C in fresh juice;	[1]	
(v)	1 week old orange juice has 0.1 mg vitamin C compared with 0.5 mg in fresh/week old blackcurrant juice has 0.4 mg of vitamin C compared to 0.7 mg in fresh; <b>Must</b> use appropriate evidence from graph.	[1]	
(vi)	Carton orange contains 0.3mg vitamin C per ml; $60 \div 0.3 = 200 \text{ cm}^3$ <b>Accept:</b> correct calculation.	[1] [1]	
(vii)	Any <b>one</b> from: • Yes – blackcurrant average is higher; • No – ranges overlap; <b>Reject:</b> yes/no unexplained.	[1]	
9 (a)	A – Palisade (mesophyll cell); B – Guard (cell); C – Lower epidermis (cell);	[1] [1] [1]	4
(b)	Thin/clear/transparent/colourless	[1]	
10 (a)	Nervous – electrical (impulses); Hormonal – chemical (messages);	[1] [1]	4
(b) (i)	The larger the diameter of the nerve, the higher/faster the speed (of conduction);	[1]	
(ii)	Faster response/reflex/reaction rate (/time); <b>Reject:</b> “faster conduction rate” unqualified	[1]	
11 (a)	As age increases so does the amount of energy required; Boys require more energy than girls;	[1] [1]	6
(b)	Increased weight/BMI/obesity; Heart disease/heart attack/stroke/high blood pressure/diabetes/arthritis;	[1] [1]	
(c)	More energy required for <b>growing</b> embryo;	[1]	
(d)	Genetic/inherited factors/alcohol/smoking/drugs;	[1]	

**12 Indicative content:**

- 1 Dish B (/with more iodine) has a larger dark (blue/black) area than dish A;
- 2 Iodine turns starch blue/black colour;
- 3 Larger concentration of/more iodine in B/5%;
- 4 Iodine (diffuses) through the agar;
- 5 Increasing the concentration of iodine solution speeds up the rate of **diffusion**;
- 6 From region of high concentration to region of low concentration;

Response	Marks
Candidates must use appropriate specialist terms throughout to describe and explain the conclusions from the results using <b>at least 5</b> of the above points. They use good spelling, punctuation and grammar and the form and style are of a high standard.	[5]–[6]
Candidates use some appropriate specialist terms throughout to describe and explain the conclusions from the results using <b>at least 3</b> of the above points. They use satisfactory spelling, punctuation and grammar and the form and style are of a satisfactory standard.	[3]–[4]
Candidates make little use of specialist terms throughout to describe and explain the conclusions from the results using <b>at least 1</b> of the above points. The spelling, punctuation and grammar, form and style are of a <b>limited</b> standard.	[1]–[2]
Response not worthy of credit.	[0]

[6]

**Total**

**AVAILABLE MARKS**

6

**80**