CCEA GCSE BIOLOGY

BIOLOGY



EXAM QUESTION PACK

UNIT 1 FOUNDATION TIER GBY11 PAPERS

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Rewarding Learning

Centre Number

Candidate Number

General Certificate of Secondary Education
2016

Biology

Unit 1
Foundation Tier

GBY11

[GBY11]

FRIDAY 10 JUNE, MORNING

TIME

1 hour 15 minutes.

INSTRUCTIONS TO CANDIDATES

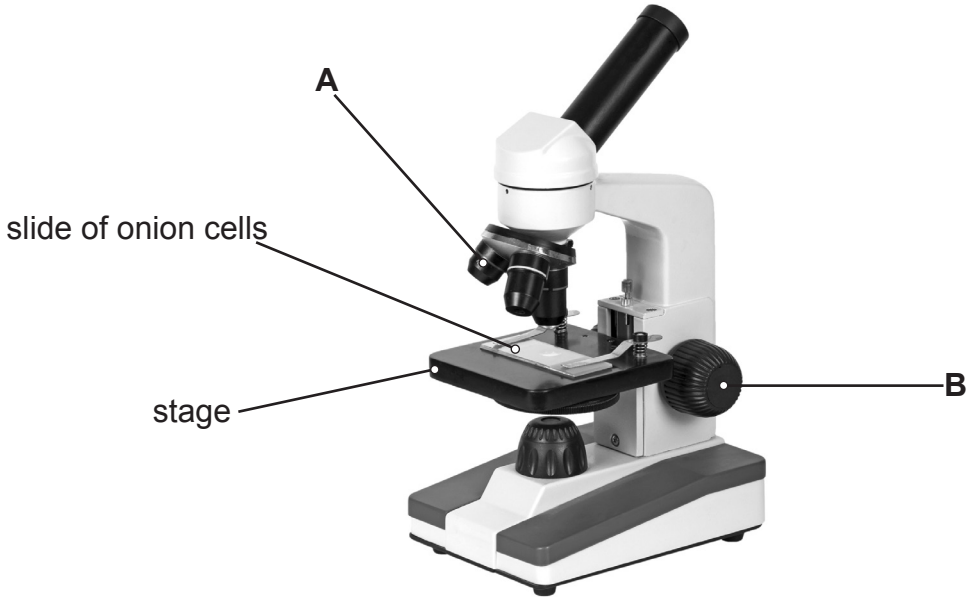
Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
You must answer the questions in the spaces provided.
Do not write outside the boxed area on each page or on blank pages.
Complete in blue or black ink only. **Do not write with a gel pen.**
Answer **all twelve** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 80.
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.
Quality of written communication will be assessed in Question **12**.

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1 The photograph shows a light microscope.



© Oleg Lopatkin / iStock / Thinkstock

Look at the photograph.

(a) Name parts **A** and **B**.

A _____ [1]

B _____ [1]

(b) Name the part of the microscope a student would look through to see the onion cells.

_____ [1]

(c) While looking through this part of the microscope the student has to focus the microscope.

What happens to the stage as the student focuses the microscope?

_____ [1]

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2 A student tested a biscuit for sugar.

(a) Choose the reagent she used.

Draw a (circle) around the correct answer.

Biuret **Ethanol** **DCPIP** **Benedict's** [1]

(b) Describe how she used this reagent.

_____

_____

_____ [2]

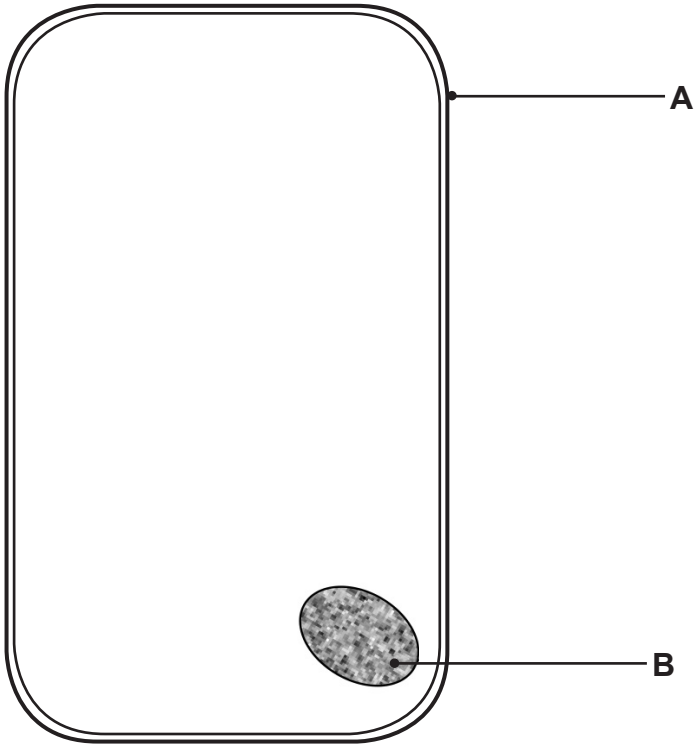
(c) What colour change showed sugar was present?

Colour at start _____

Colour at end _____ [2]

[Turn over

3 The diagram shows part of a leaf cell.



© Chief Examiner

Look at the diagram.

(a) Name parts **A** and **B**.

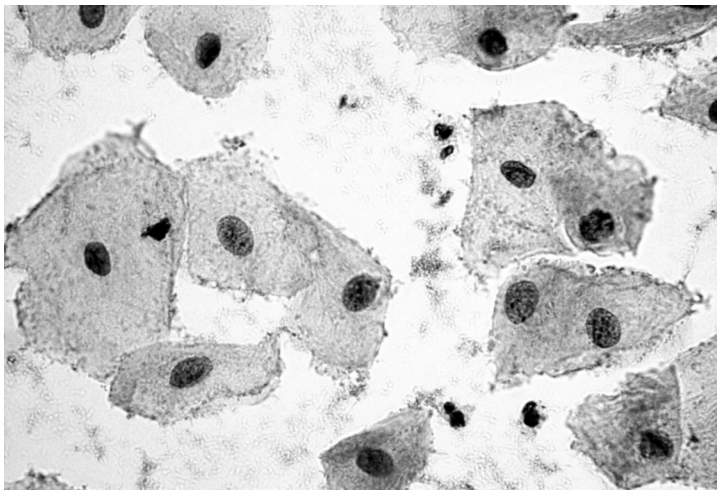
A _____ [1]

B _____ [1]

(b) **Complete the diagram** by drawing the vacuole and a chloroplast. [2]

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(c) The photograph shows some cells stained and viewed under the microscope.



© Dr Gopal Murti / Science Photo Library

Look at the photograph.

(i) Suggest why the cells were stained.

_____

_____ [1]

(ii) Name the type of cells shown in the photograph.

Tick (✓) the correct answer.

plant	
virus	
animal	
bacterium	

[1]

[Turn over

4 **(a)** Teeth begin the mechanical digestion of food into smaller pieces.

(i) Choose the part of the digestive system where mechanical digestion begins.

Draw a (circle) around the correct answer.

stomach **colon** **buccal cavity** **liver** [1]

Amylase acts on the starch in bread.

(ii) Suggest how breaking the bread into smaller pieces affects the speed of action of amylase.

Explain your answer.

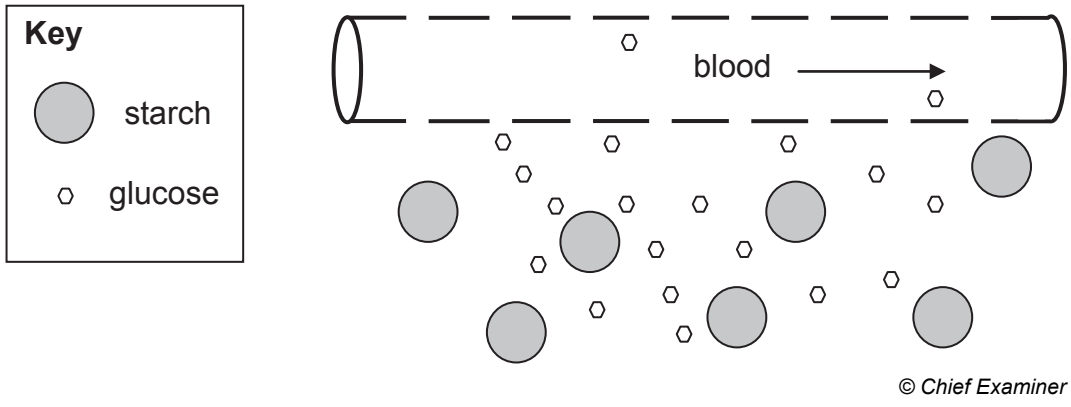
Speed _____

Explanation _____

_____ [2]

Starch is broken down into glucose.

The diagram shows the absorption of glucose into the blood.



© Chief Examiner

(b) Use information from the diagram to explain why starch needs to be digested.

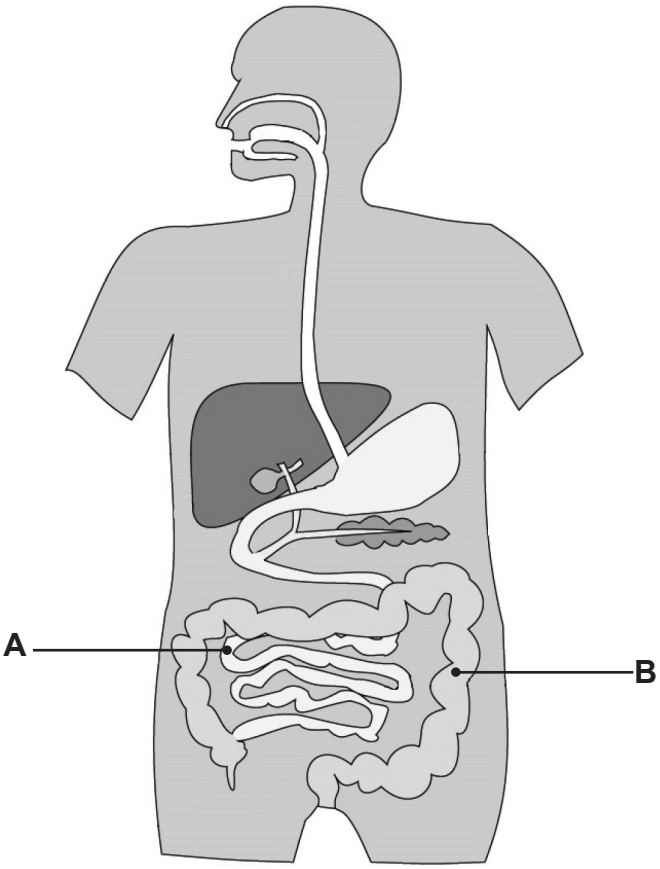
_____

_____

_____ [2]

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The diagram shows part of the digestive system.



Source: CCEA

Look at the diagram.

(c) Complete the table by naming parts **A** and **B**.

Give the function of part **B**.

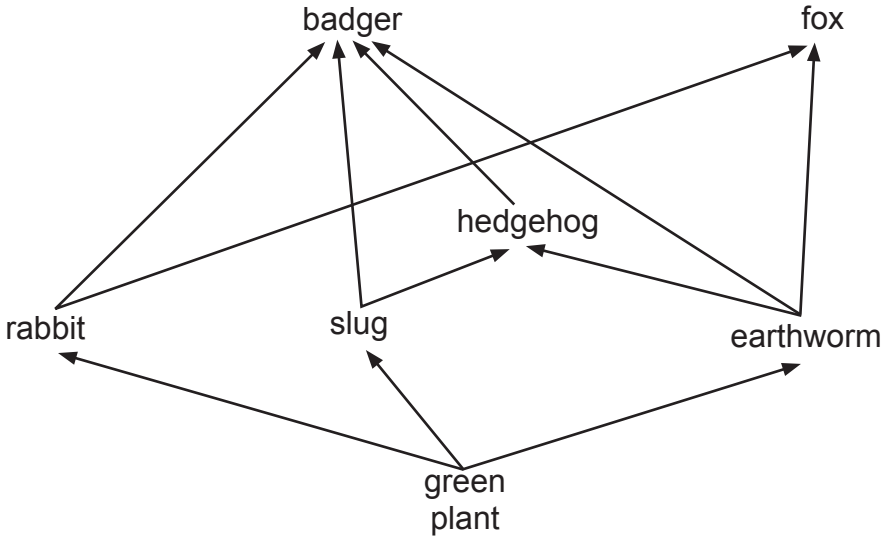
Part	Name	Function
A		absorbs digested food
B		

[3]

[Turn over

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5 The diagram shows part of a food web from a woodland.



(a) Why are green plants described as producers?

_____

_____

_____ [2]

(b) How many primary consumers are there in this food web?

_____ [1]

(c) Name the animal that feeds at **two** different trophic levels.

_____ [1]

(d) Complete the food chain.

green plant	slug		

[2]

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(e) Explain why the number of hedgehogs may decrease if a disease killed most of the rabbits.

_____

_____

_____

_____ [2]

(f) Families of approximately six badgers live underground in setts.

Badgers are difficult to count because they are most active at night.

The number of badgers in this woodland was estimated by counting the number of badger setts rather than trapping individual badgers.

(i) Suggest one advantage of using this method to estimate the numbers of badgers in the woodland rather than trapping.

_____

_____

_____ [1]

(ii) This method may not give accurate results.

Suggest why.

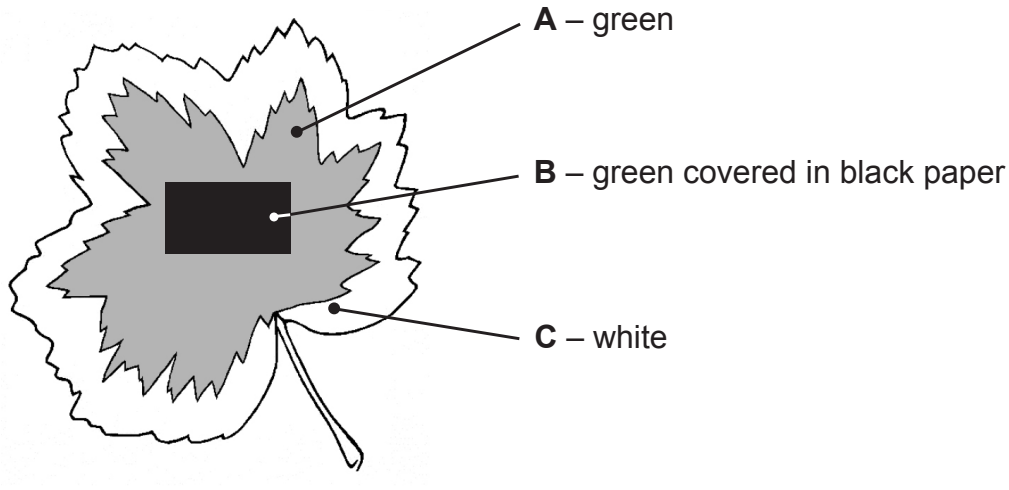
_____

_____

_____ [1]

[Turn over

6 The drawing shows a variegated leaf used in a photosynthesis experiment.



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Look at the drawing.

(a) Why is the leaf used in this experiment described as variegated?

_____

_____ [1]

(b) The leaf was destarched before the experiment.

(i) Describe how the leaf was destarched.

_____

_____

_____ [2]

(ii) Why was it important to destarch the leaf before the experiment?

_____

_____ [1]

(c) The destarched leaf was left in bright light for 24 hours.

It was then tested for starch using a chemical reagent.

The table shows some of the results.

Part of leaf	Colour of chemical reagent	
	before test	after test
A	yellow/brown	
B	yellow/brown	
C	yellow/brown	yellow/brown

(i) Name the chemical reagent used to test a leaf for starch.

_____ [1]

(ii) **Complete the table** to show the results for parts **A** and **B** of the leaf. [2]

(iii) Explain the result for part **C** of the leaf.

Use evidence from the table in your answer.

_____

_____

_____

_____

_____

_____ [3]

[Turn over

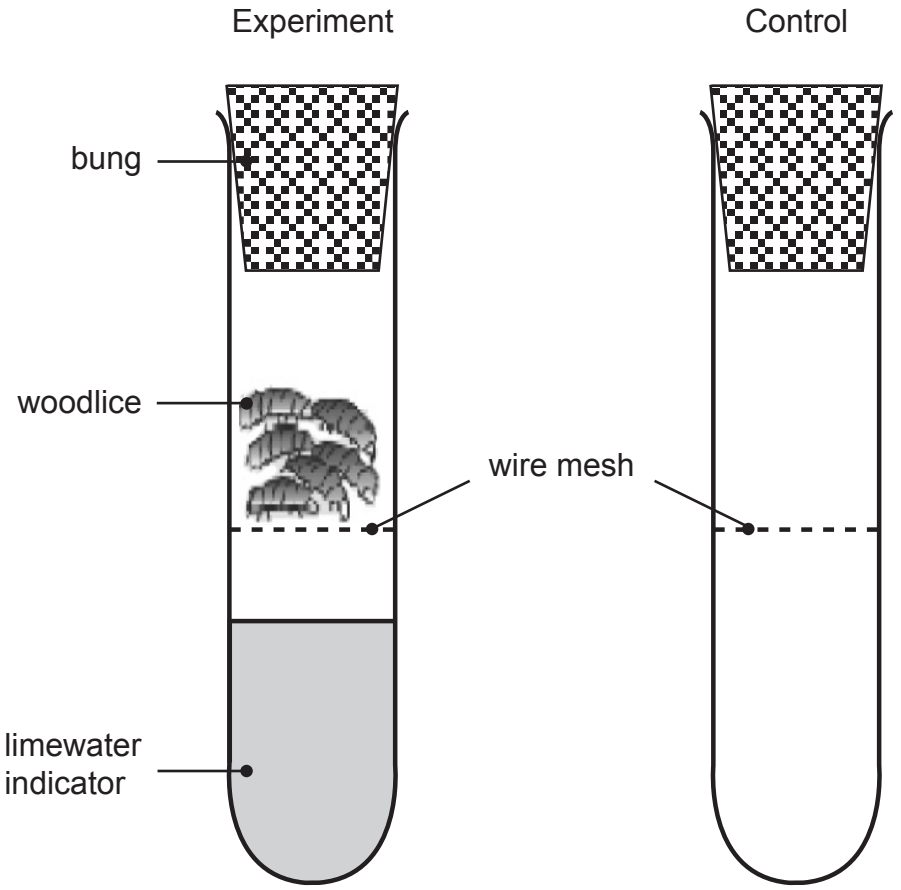
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7 A pupil set up an experiment to investigate respiration in woodlice.

She placed several woodlice on a wire mesh in a test tube containing limewater indicator.

Limewater indicator shows the presence of carbon dioxide by becoming cloudy.

She placed a bung in the test tube for 60 minutes.



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(a) The bung was left in the test tube for no longer than 60 minutes.

Suggest why.

_____

_____

_____ [2]

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After 60 minutes the limewater indicator changed from clear to cloudy.

(b) Explain why the limewater indicator turned cloudy.

_____

_____ [1]

(c) A control was needed to show that the change in the limewater indicator was due to the woodlice.

Complete the diagram of the control tube by drawing and labelling its contents.

[2]

(d) Give **one** way woodlice use the energy released by respiration.

_____ [1]

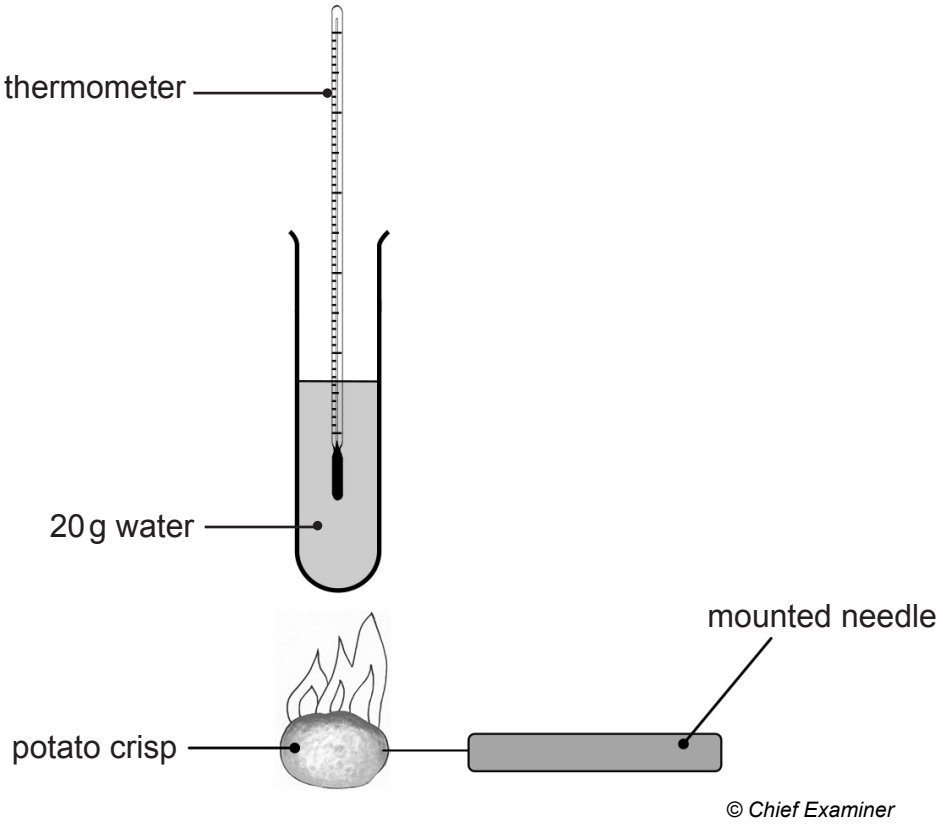
[Turn over

8 The diagram shows the apparatus a pupil in a class used to measure the energy content of a potato crisp.

The temperature of the water at the start was 14°C.

A burning potato crisp was held under the test tube until it went out.

The temperature of the water at the end was 17°C.



© Chief Examiner

The energy in the potato crisp is calculated using the formula.

Energy/J = mass of water/g × temperature rise/°C × 4.2

(a) Calculate the energy in the potato crisp.
Show your working.

Energy _____ J [2]

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(b) What other measurement would the pupils in the class need to take so that they all could compare their results?

_____ [1]

(c) The result for the energy content in this potato crisp may be lower than the value given on the packet.

Suggest **two** reasons why.

1. _____

_____

2. _____

_____ [2]

(d) Potato crisps contain carbohydrates.

Carbohydrates are made up of three elements.

One of these elements is hydrogen.

Name the other **two** elements.

_____ and _____ [2]

[Turn over

(e) The table shows how the energy requirements of a boy change with age.

Age /years	Energy requirement per day /kJ
1	3000
2	6000
5	7000
10	10 000
15	12 000
18	13 000

(i) Describe and explain the trend in the table.

Description _____

_____

Explanation _____

_____

_____ [2]

(ii) Give **two** factors, **other than age**, which would affect the daily energy requirement of a person.

1. _____

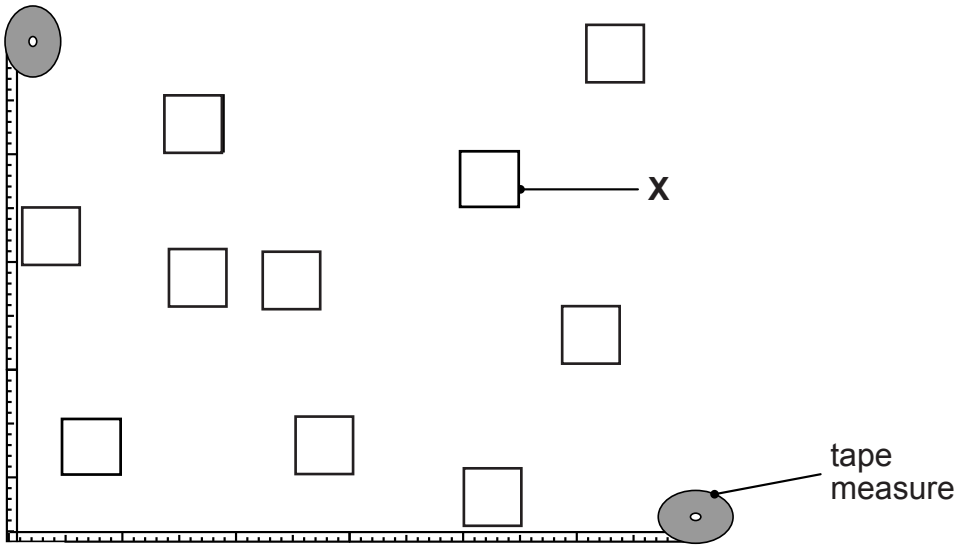
2. _____ [2]

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9 Pupils carried out an investigation to estimate the size of a population of daisies on a playing field.

They placed two tape measures at right angles on the playing field.

They then placed apparatus **X** at 10 random coordinates inside the area enclosed by the two tape measures.



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(a) Name apparatus **X**.

_____ [1]

(b) Explain why random coordinates were used to decide where to place apparatus **X**.

_____

_____ [1]

The area of apparatus **X** is 0.25 m^2.

(c) Describe how the pupils would have used apparatus **X** to calculate the number of daisies per square metre on the playing field.

_____

_____

_____ [2]

[Turn over

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10 Sulfur dioxide is one cause of acid rain.

(a) Explain how sulfur dioxide forms acid rain.

_____

_____

_____ [2]

(b) Describe **one** harmful effect acid rain has on living organisms.

_____

_____ [1]

The table shows changes in sulfur dioxide emissions in Ireland from 1999 to 2007.

Year	Sulfur dioxide emissions /1000 tonnes
1999	159.5
2000	140.5
2001	135.5
2002	102.2
2003	79.4
2004	71.7
2005	70.4
2006	60.3
2007	54.7

Greenhouse Gas and Acid Rain Precursor Accounts for Ireland 1998-2007.
© Government of Ireland 2009, Material complied by the Central Statistics Office.
ISBN: 978-1-4064-2098-2. Licensed under: https://creativecommons.org/licenses/by/4.0/legalcode

(c) Describe the change in sulfur dioxide emissions from 1999 to 2007.

Suggest **one** reason for this change.

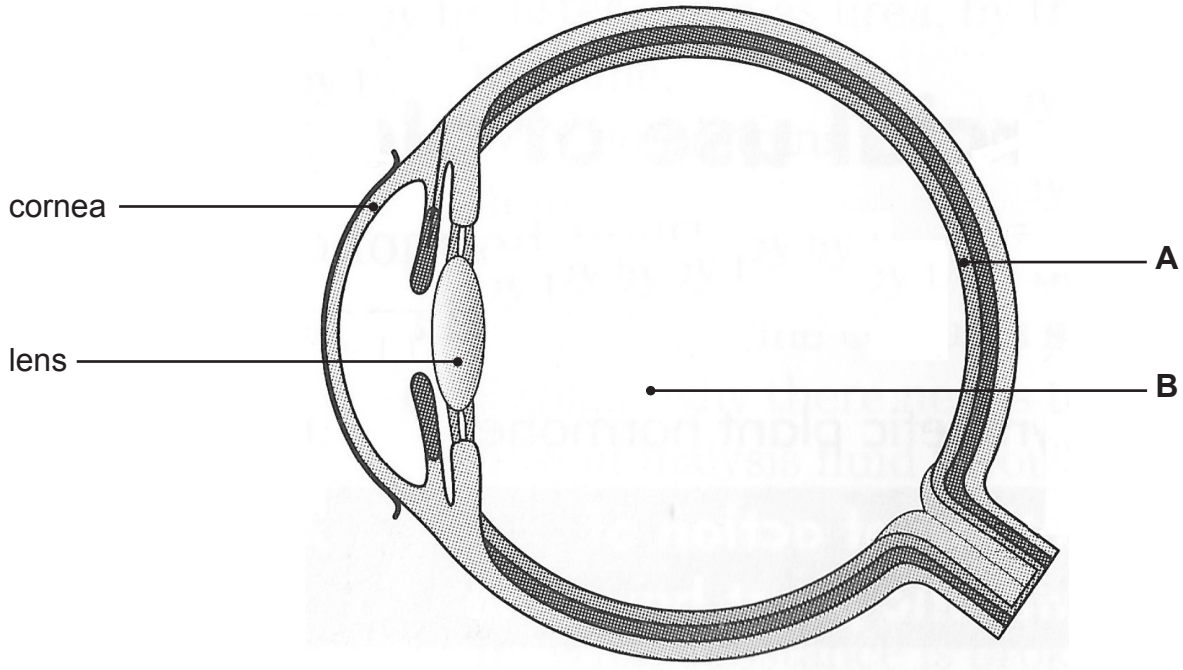
_____

_____

_____

_____ [2]

11 The photograph shows a section through an eye.



© GCSE Biology for CCEA, Revision Book by James Napier. Published by Hodder Education. ISBN: 9780340940556. "Reproduced by permission of Hodder Education".

(a) Name and give the function of parts **A** and **B**.

A _____ [1]

Function _____

_____ [1]

B _____ [1]

Function _____

_____ [1]

(b) The lens and the cornea work together to carry out one function.

Describe this function.

_____

_____ [1]

[Turn over

12 The photograph shows a farmer in a rainforest area clearing land by cutting down and burning trees.



© Vaughan Fleming / Science Photo Library

Use your knowledge and understanding of the carbon cycle to explain how

- cutting down and burning trees affects the concentration of the carbon dioxide in the atmosphere.
- the change in the atmospheric carbon dioxide concentration harms the environment.

In this question you will be assessed on your written communication skills, including the use of specialist scientific terms.

[6]

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Question Number	**Marks**
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
Total Marks	

Examiner Number

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Rewarding Learning

General Certificate of Secondary Education
2016

GCSE Biology

Unit 1

Foundation Tier

[GBY11]

FRIDAY 10 JUNE, MORNING

MARK SCHEME

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General Marking Instructions

Introduction

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				AVAILABLE MARKS
1	**(a)**	A – Objective [lens]; [1] B – Focus [knob]; [1]	[2]	
	(b)	Eyepiece [lens];	[1]	
	(c)	Stage would move (up or down);	[1]	4
2	**(a)**	Benedict's;	[1]	
	(b)	Add to/mix with food sample; Heat;	[2]	
	(c)	Blue; [brick] red **Accept**: green/orange	[2]	5
3	**(a)**	A – Cell wall; [1] B – Nucleus; [1]	[2]	
	(b)	Large central vacuole drawn; Chloroplast drawn in cytoplasm [between vacuole and cell membrane];	[2]	
	(c) **(i)**	Cells clearly visible/seen;	[1]	
	(ii)	Animal;	[1]	6
4	**(a)** **(i)**	Buccal cavity;	[1]	
	(ii)	Increases [speed]/faster; [1] Larger surface area (for enzymes); [1]	[2]	
	(b)	Starch molecule too large/sugar small enough; [1] To fit/pass through (capillary wall)/into blood; [1] **Accept**: Starch insoluble/sugar soluble;	[2]	
	(c)	Ileum; [1] Colon; [1] Absorb water; [1]	[3]	8

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				AVAILABLE MARKS
5	**(a)**	Make food; [1] By photosynthesis/using sunlight; [1]	[2]	
	(b)	3;	[1]	
	(c)	Badger;	[1]	
	(d)	Hedgehog and Badger; [1] Arrows; [1]	[2]	
	(e)	Less rabbits for badgers to eat; [1] So badgers eat more hedgehogs/more of hedgehogs' food; [1] **or** Less rabbits for fox to eat; [1] Fox eats more earthworms so less food for hedgehogs; [1]	[2]	
	(f) **(i)**	Counting setts does not harm badgers/can be done during day/doesn't have to be done at night/may not trap all the badgers;	[1]	
	(ii)	Sett may be used by a number of badgers/families may use more than one sett;	[1]	10
6	**(a)**	Green with white (edge/described);	[1]	
	(b) **(i)**	Left in dark/cupboard; [1] 48 hours; [1]	[2]	
	(ii)	Ensure no starch present in leaf at start of experiment/fair test	[1]	
	(c) **(i)**	Iodine;	[1]	
	(ii)	A – Blue/black; [1] B – Yellow/brown; [1]	[2]	
	(iii)	No colour change/No starch present in C; [1] Any **two**: [2] No photosynthesis; No chlorophyll present; To trap light;	[3]	10
7	**(a)**	Woodlice may use up/run out of oxygen/lack of oxygen [1]; woodlice die; [1]	[2]	
	(b)	Carbon dioxide **produced**/by woodlice respiration;	[1]	
	(c)	Same volume of limewater/indicator drawn; labelled; N.B. No woodlice drawn	[2]	
	(d)	Movement/heat/growth/reproduction;	[1]	6

				AVAILABLE MARKS
8	**(a)**	$20 \times 3 \times 4.2$; [1] 252; [1]	[2]	
	(b)	Mass of crisp;	[1]	
	(c)	Any **two** from: Crisp doesn't all burn; Some heat lost to air/tube/needle; Temp/mass/volume not measured accurately;	[2]	
	(d)	Oxygen/O; [1] Carbon/C; [1]	[2]	
	(e) **(i)**	Energy requirement increases with age; [1] Energy needed for growth/older boy has more muscles which use more energy; [1]	[2]	
	(ii)	Any **two** from: Gender; Activity/manual work; Pregnancy;	[2]	11
9	**(a)**	Quadrat;	[1]	
	(b)	Ensure sample unbiased/make it a fair test/representative;	[1]	
	(c)	Count/average the number of daisies **per** quadrat; [1] Multiply the number per quadrat by 4; [1]	[2]	4
10	**(a)**	Dissolves in/combines/reacts; with water [in clouds]/water vapour;	[2]	
	(b)	Defoliates trees (which then die)/acidifies lakes so animals die;	[1]	
	(c)	Sulfur dioxide emissions decrease; Burning less coal/smokeless zones/laws inforced to reduce emissions/ catalytic converters in cars/low sulfur fuels/burn less fossil fuels/increased use of renewable energy;	[2]	5
11	**(a)**	**A** – retina; [1] Contains light sensitive cells; [1] **B** – vitreous humour; [1] Maintains shape of eyeball; [1]	[4]	
	(b)	Focus/bend/refract light on to retina;	[1]	5

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12 Indicative Content

- (Less trees/less plants so) less photosynthesis;
- Less CO_2 used by plants/less CO_2 absorbed from atmosphere;
- Combustion/burning produces/releases CO_2 into atmosphere;
- Overall CO_2 in atmosphere increases;
- (Increased atmospheric CO_2 linked to) global warming/increased temperature;
- Irregular weather pattern;
- Ice caps melt/flooding/sea levels rise;
- loss of habitat/species

Accept: bullet points which start with capital letter, contain a verb and end in full stop as sentences.

Band	Response	Mark
A	Candidates **must use appropriate, specialist terms** throughout to describe and explain their conclusions **using <u>at least 5</u> of the points**. They use **good** spelling, punctuation and grammar and the form and style are of a **high standard**.	[5]–[6]
B	Candidates use **some appropriate, specialist terms** throughout to describe and explain their conclusions **using <u>at least 3</u> of the points**. They use **satisfactory** spelling, punctuation and grammar and the form and style are of a **satisfactory standard**.	[3]–[4]
C	Candidates make **little use of specialist terms** throughout to describe and explain their conclusions **using <u>at least 1</u> of the points**. The spelling, punctuation and grammar, form and style are of a **limited** standard.	[1]–[2]
D	Response not worthy of credit.	[0]

[6] 6

Total **80**

AVAILABLE MARKS

Rewarding Learning

General Certificate of Secondary Education
2015

Biology

Unit 1

Foundation Tier

[GBY11]

FRIDAY 5 JUNE, AFTERNOON

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					AVAILABLE MARKS
1	**(a)**	B;	[1]		
		C;	[1]		
		D;	[1]	[3]	
	(b)	Cellulose cell walls/leaves/roots		[1]	4
2	**(a)**	Carbon (C)/Hydrogen (H)/Oxygen (O);		[1]	
	(b)	Potato → Carbohydrate;	[1]		
		Butter → Fat;	[1]		
		Chicken → Protein;	[1]	[3]	4
3	**(a)**	**(i)** (Population) increases/rises;		[1]	
		(ii) Birth rate greater (than death rate);		[1]	
	(b)	**(i)** Decreases;		[1]	
		(ii) Any **two** from: Lack of food/competition for food; Predation; Cold temperatures; Disease;		[2]	
		(iii) Dies out/becomes extinct/declines to zero;		[1]	6

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4 Indicative content

1. ┌Boil leaf in water;
2. └Kills leaf;
3. ┌Boil leaf in ethanol;
4. └To remove chlorophyll/decolourise;
5. ┌Dip/place leaf in water;
6. └Soften leaf;
7. ┌Add iodine to leaf;
8. └Turns blue-black shows starch/photosynthesis has taken place;
9. Heat ethanol in waterbath as ethanol flammable/Bunsen turned off;

Response	Marks
Candidates **must use appropriate, specialist terms** throughout to describe and explain how a leaf is tested for starch **using at least FIVE 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 how a leaf is tested for starch **using at least THREE 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 how a leaf is tested for starch **using at least ONE of the above points**. The spelling, punctuation and grammar, form and style are of a **limited** standard.	[1]–[2]
Response not worthy of credit**.**	[0]

[6] 6

5 (a) A – cell wall; [1]

(b) (i) 80 (mm); [1]

(ii) 80 ÷ 200; Accept ECT using candidate's answer from **(b)(i)** ÷ 200 [1]
= 0.4 (mm); Accept correct computation using candidate's answer from **(b)(i)** [1] [2]

(c) Smaller; [1]

(d) Any **two** from:
Non-cellulose cell wall;
No nucleus/has loop of DNA;
Plasmids; (accept converse for onion cell) [2]

(e) Bacterium/bacterial; [1] 8

AVAILABLE MARKS

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						AVAILABLE MARKS
6	**(a)**	**(i)**	A – colon; B – ileum;	[1] [1]	[2]	
		(ii)	G on stomach/correct use of line labelled G		[1]	
		(iii)	Acid; protease;	[1] [1]	[2]	
	(b)	**(i)**	Liver;		[1]	
		(ii)	Water;		[1]	
		(iii)	Fat digested faster when bile present;		[1]	
		(iv)	(Large fat droplets) broken down **into smaller droplets**; **Reject** broken down (uq)		[1]	
		(v)	Increases surface area (for enzyme/lipase to act);		[1]	10
7	**(a)**	**(i)**	Nervous – Electrical; Hormonal – Chemical;	[1] [1]	[2]	
		(ii)	Nervous system faster than hormonal;		[1]	
	(b)	**(i)**	Distance (ruler drops);		[1]	
		(ii)	Any **one** from: Arm rested on bench; Ruler held between finger and thumb; Same (weight of) ruler used;		[1]	
		(iii)	Pupil A;		[1]	
		(iv)	Pupil B;		[1]	
		(v)	Reactions did improve with practice; Third test faster/shorter distance than first; Suitable values from table (e.g. 150 v 85);	[1] [1] [1]	[3]	10

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					AVAILABLE MARKS
8	**(a)**	A – Photosynthesis;	[1]		
		B – Respiration;	[1]	[2]	
	(b)	**(i)** Accurate plots × 2	[2]		
		Line;	[1]	[3]	
		(ii) Beech (decompose faster);	[1]		
		After 300 days only 30% of beech remained;	[1]		
		Compared to 50% of holly;	[1]	[3]	
		(iii) Saprophytes;		[1]	
		(iv) Bacteria;		[1]	
		(v) Humus;		[1]	11
9	**(a)**	Plants grow from growing points/apices;	[1]		
		Produce/in branching pattern;	[1]		
		Animals grow all over;	[1]	[3]	
	(b)	*Digestive system* – (Organ) system;	[1]		
		Eye – Organ;	[1]	[2]	5
10	**(a)**	Trachea;	[1]		
		Diaphragm;	[1]	[2]	
	(b)	*Description* – Balloons deflate/described;	[1]		
		Explanation – Reduced volume;	[1]		
		Increased pressure/forces air out;	[1]	[3]	5
11	**(a)**	**(i)** Sweep/wave/drag back and forth (side to side/figure of eight);	[1]		
		Through/over the long grass;	[1]	[2]	
		(ii) Any **two** from:			
		Same net/size of net/mesh;			
		Sweep net same length of time;			
		Same day/time of day;			
		Same size of area;		[2]	
	(b)	Pitfall trap;		[1]	5

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12 Indicative content

1. Sugar/glucose present;
2. Benedict's solution changes from blue to brick red;

3. Fats/lipids present;
4. Ethanol changes from clear to white (emulsion);

5. Starch present;
6. Iodine changes from yellow/brown to blue/black;

7. Protein absent;
8 No colour change in Biuret;

Response	Marks
Candidates **must use appropriate, specialist terms** throughout to describe and explain their conclusions **using at least SIX of the 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 their conclusions **using at least FOUR of the 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 their conclusions **using at least TWO of the points**. The spelling, punctuation and grammar, form and style are of a **limited** standard.	[1]–[2]
Response not worthy of credit**.**	[0]

[6] 6

Total **80**

AVAILABLE MARKS

Rewarding Learning

Centre Number

Candidate Number

General Certificate of Secondary Education
2014

GCSE Biology

Unit 1

Foundation Tier

[GBY11]

GBY11

FRIDAY 6 JUNE, AFTERNOON

TIME

1 hour 15 minutes.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
You must answer the questions in the spaces provided. Do not write outside the box, around each page or on blank pages.
Complete in blue or black ink only. **Do not write with a gel pen.**
Answer **all twelve** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is **80**.
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

Quality of written communication will be assessed in question **8(e)**.

8678

28GBY1101

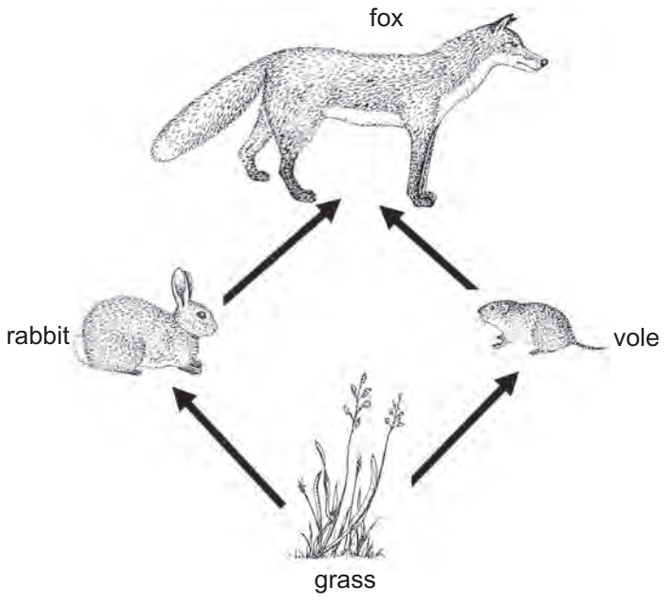
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Examiner Only	
Marks	Remark

1 **(a)** What is the source of energy for all food webs?

_____ [1]

The diagram shows part of a food web.



Adapted from: M. Jones, and G. Jones, New Edition Biology, Cambridge University Press

Look at the diagram.

(b) What do the arrows in this food web show?

_____ [1]

(c) The producer in this food web is grass.

Explain why producers are important in food webs.

_____

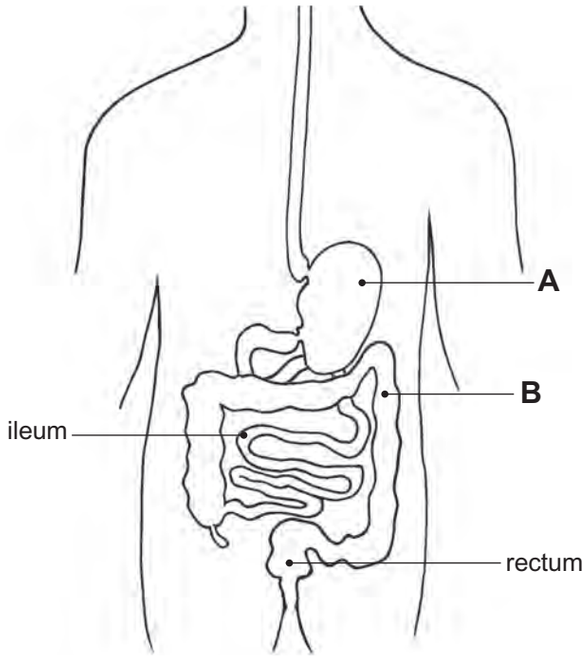
_____

_____ [2]

Total Question 1	

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2 The diagram shows part of the human digestive system.



© CCEA

Look at the diagram.

(a) Name parts **A** and **B**.

A _____ [1]

B _____ [1]

(b) **(i)** What is the function of the ileum?

_____

_____ [1]

(ii) What is the function of the rectum?

_____

_____ [1]

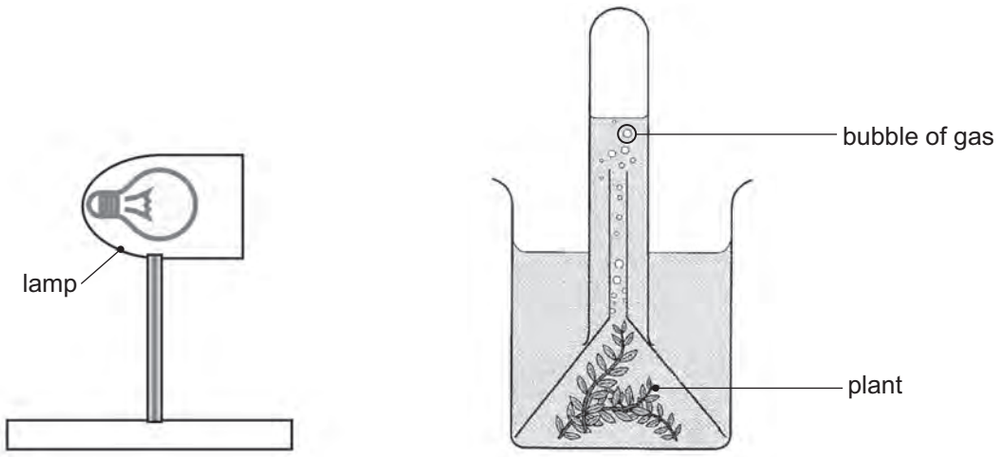
Examiner Only	
Marks	Remark
Total Question 2	

[Turn over

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3 The diagram shows apparatus used in a photosynthesis experiment.

Examiner Only	
Marks	Remark



© GCSE Biology for CCEA 2nd Edition by James Napier, published by Hodder Education, 2011. ISBN 978-0340983805. "Reproduced by permission of Hodder Education".

Look at the diagram.

The lamp was placed at different distances from the plant.

(a) What factor does this change?

_____ [1]

(b) Photosynthesis was measured by counting the bubbles of gas given off by the plant.

(i) Name the gas in the bubbles.

_____ [1]

(ii) Suggest why measuring the volume of the gas would be more accurate than counting the bubbles.

_____

_____ [1]

(iii) Name **one other** substance produced by the plant during photosynthesis.

_____ [1]

(c) Photosynthesis takes place in part of a plant cell.

Draw a (circle) around the name of this part.

chromosome **chloroplast** **cytoplasm**

[1]

Examiner Only	
Marks	Remark
Total Question 3	

[Turn over

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4 **Complete the table** to show the differences between animal, plant and bacterial cells.

Use a tick (✓) to show if the cell part is present and a cross (✗) if it is absent.

Cell part	Cell		
	Animal	**Plant**	**Bacterium**
Chloroplast			✗
Cell wall			✓
Cell membrane	✓		✓
Nucleus	✓	✓	

[6]

Examiner Only	
Marks	**Remark**
Total Question 4	

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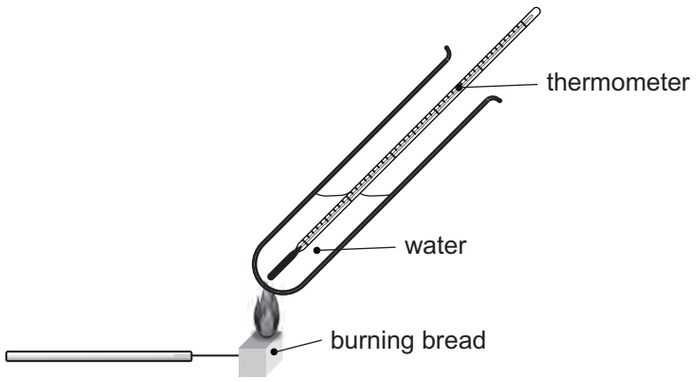
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(Questions continue overleaf)

[Turn over

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5 **(a)** The diagram shows the apparatus used to compare the energy in three types of bread.



© CCEA

The results are shown in the table.

Type of bread	Temperature of water at start/°C	Temperature of water at end/°C	Rise in temperature of water/°C
White bread	19	38	19
Brown bread	20	35	
Soda bread	18	41	23

(i) **Complete the table** by calculating the rise in temperature of the water caused by burning the brown bread.

[1]

Examiner Only	
Marks	Remark

(ii) A man doing hard work eats a sandwich for his lunch.

Use the results in the table to help explain which type of bread he should choose.

_____

_____

_____ [2]

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The table shows the contents of one slice of white bread and one slice of brown bread.

Content	White bread/g	Brown bread/g
Protein	1.7	2.9
Carbohydrate	17.5	15.0
Fat	0.7	0.6
Fibre	1.3	2.0
Salt	0.2	0.1

Look at this table.

(b) Use evidence from this table to give **three** reasons why brown bread is healthier than white bread.

Explain each reason.

1. Evidence _____

_____

Explanation _____

_____ [2]

2. Evidence _____

_____

Explanation _____

_____ [2]

3. Evidence _____

_____

Explanation _____

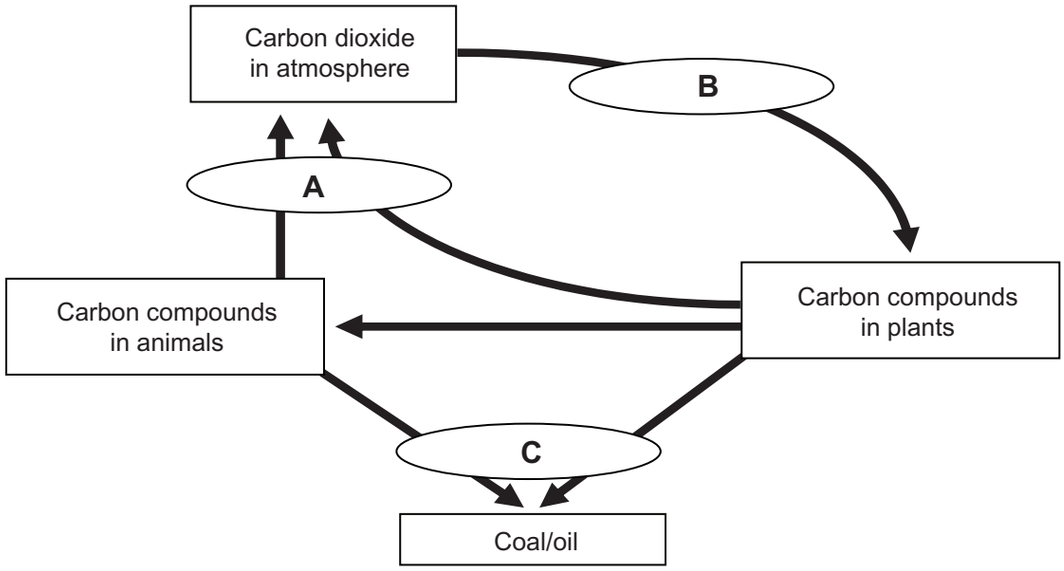
_____ [2]

Examiner Only	
Marks	Remark
Total Question 5	

[Turn over

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6 **(a)** The diagram shows part of the carbon cycle.



Look at the diagram.

Examiner Only	
Marks	Remark

(i) Name processes **A**, **B** and **C**.

A _____ [1]

B _____ [1]

C _____ [1]

(ii) How does process **C** reduce carbon dioxide in the atmosphere?

_____

_____

_____ [1]

(b) Over the last 100 years the amount of carbon dioxide in the atmosphere has increased.

(i) Suggest **two ways** humans are causing this increase.

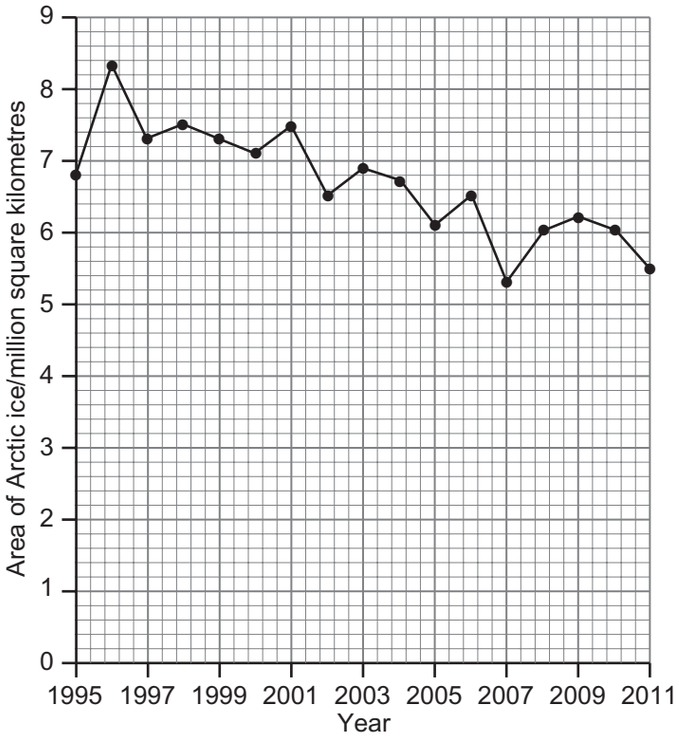
1. _____ [1]

2. _____ [1]

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The increase of carbon dioxide in the atmosphere has affected the area of Arctic ice.

The graph shows changes in the area of Arctic ice.



© National Snow and Ice Data Center - Average Monthly Arctic Sea Ice Extent August 1979-2012

Look at the graph.

(ii) **Draw** a straight line of best fit to show the trend from 1995 to 2011. [1]

The decrease in the area of Arctic ice has harmful effects on the environment.

(iii) Suggest **two** of these harmful effects.

1. _____

_____ [1]

2. _____

_____ [1]

Examiner Only	
Marks	Remark
Total Question 6	

[Turn over

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7 The photographs show two areas in a woodland.

Area **A** has trees which keep their leaves all year round.
Area **B** has trees which lose their leaves in winter.

Area A



© W Broadhurst/ Science Photo Library

Area B



© Bob Gibbons/Science Photo Library

Pupils measured the biodiversity of each area in the woodland.

Examiner Only	
Marks	Remark

(a) Explain what is meant by biodiversity.

_____

_____ [1]

(b) Pupils sampled the number of plant species and crawling insect species in ten places in each area of woodland.

(i) Name the apparatus used to sample the number of plant species.

_____ [1]

(ii) Name the apparatus used to sample the number of crawling insect species.

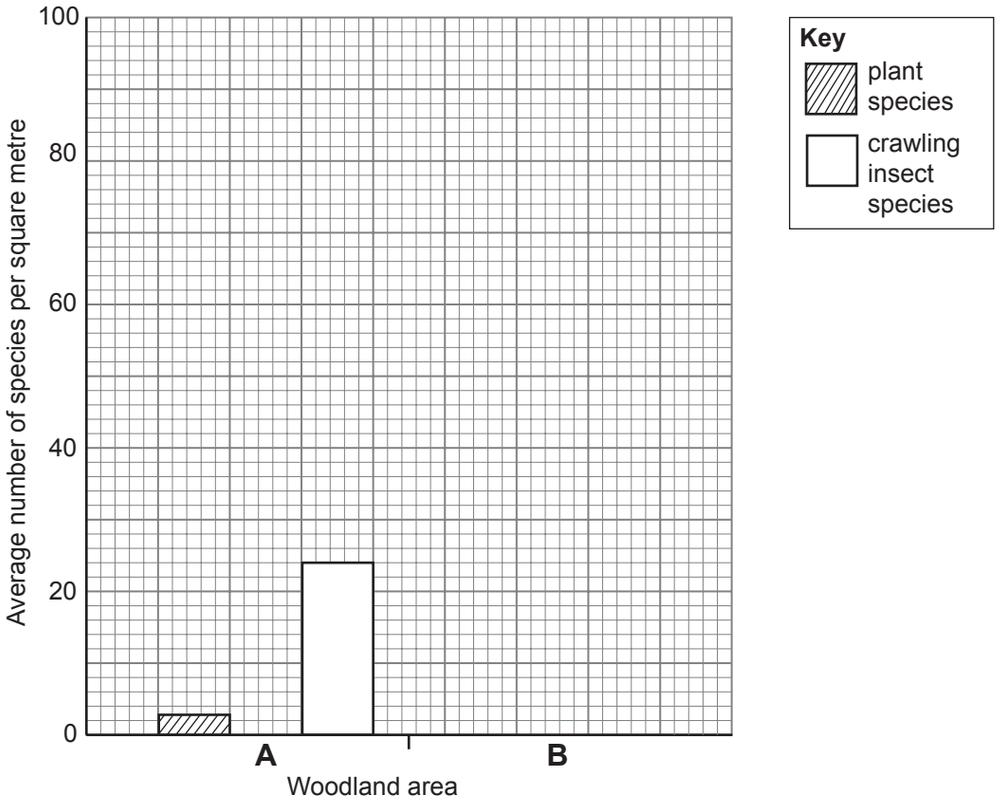
_____ [1]

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The table shows the average number of species found in each area of woodland.

Woodland area	Average number per square metre	
	Plant species	Crawling insect species
A	3	24
B	10	82

(c) (i) Complete the bar chart of these results.



[2]

(ii) What do the results tell you about the biodiversity of the two areas in the woodland?

_____

_____

_____

_____ [2]

Examiner Only

Marks	Remark

[Turn over

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(iii) Environmental factors affecting the numbers of species can be biotic or abiotic.

Which **three abiotic** factors may have caused the difference in the number of species in these two woodland areas.

Place a tick (✓) in the appropriate boxes.

Disease	☐	Light	☐
Soil water	☐	Minerals	☐
Predation	☐	Competition	☐

[3]

Examiner Only	
Marks	Remark
Total Question 7	

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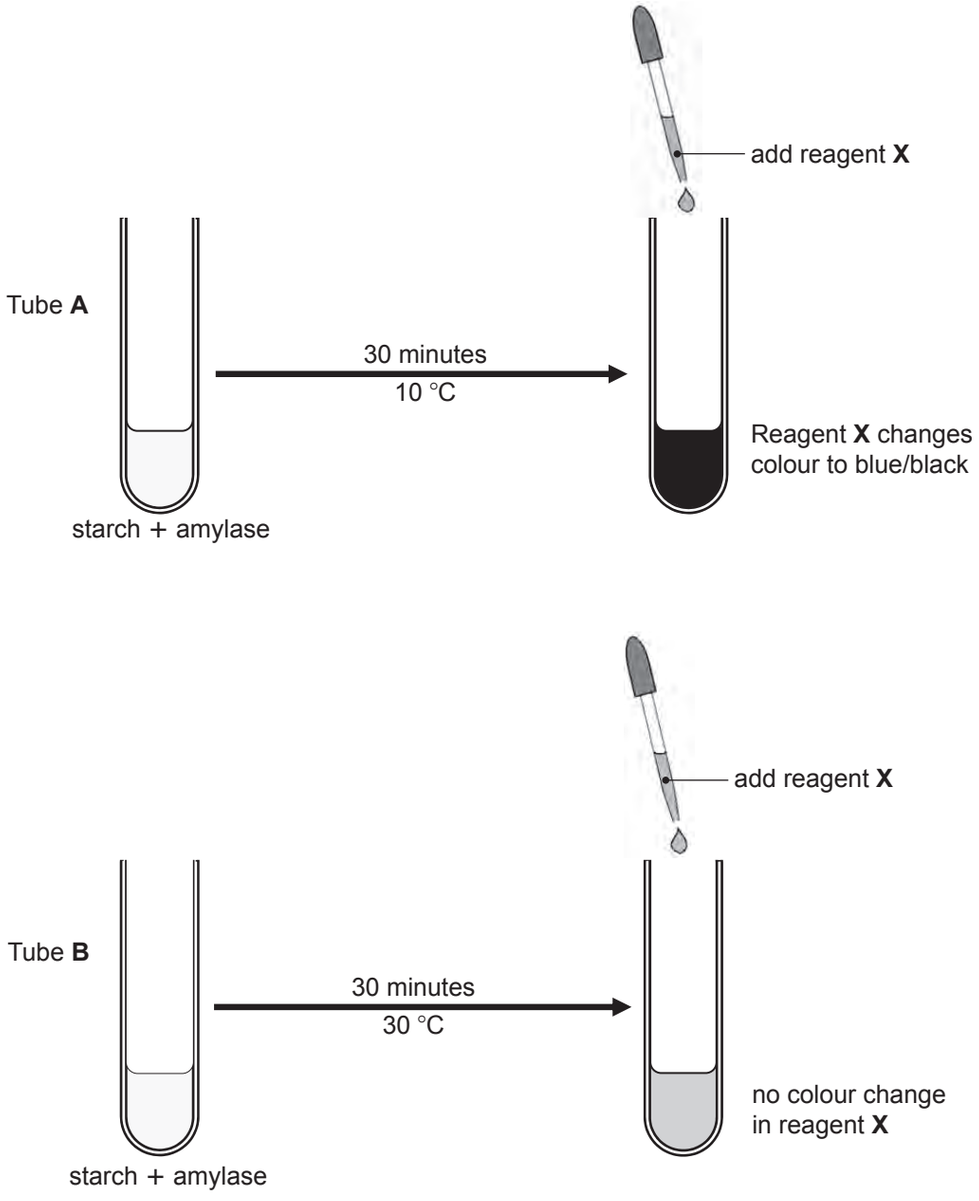
(Questions continue overleaf)

[Turn over

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8 The diagram shows an experiment on the action of the enzyme amylase.

Examiner Only	
Marks	Remark



Look at the diagram.

(a) Name reagent **X**.

_____ [1]

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(b) Which factor was changed in this experiment?

_____ [1]

(c) Explain why there is no colour change in tube **B**.

_____

_____ [1]

(d) **(i)** What is produced when starch is broken down by amylase?

_____ [1]

(ii) How could you use Benedict's solution to show that this product was present?

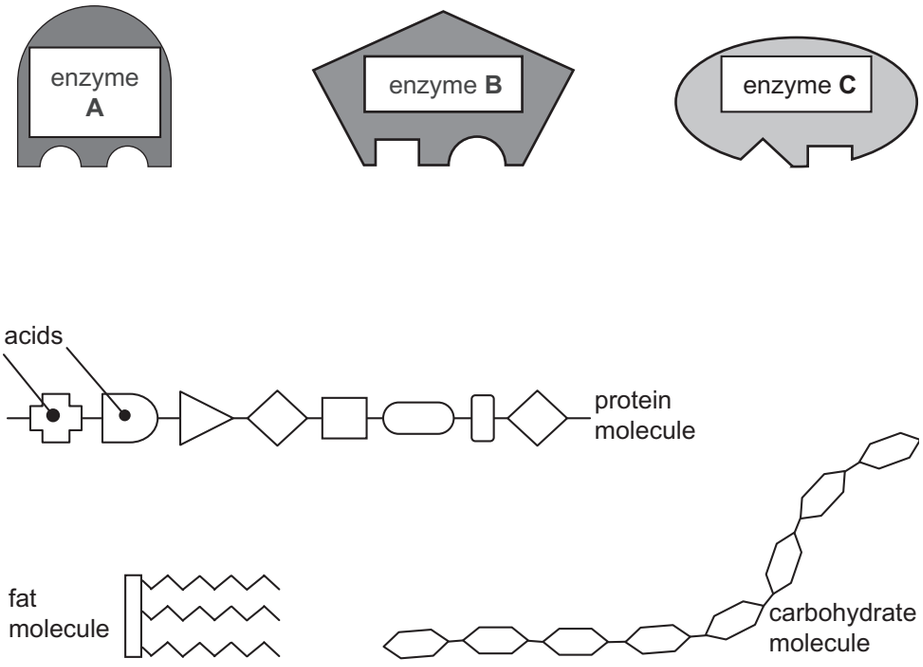
_____

_____

_____ [3]

Examiner Only	
Marks	Remark

The diagram shows enzymes and food molecules.



Examiner Only	
Marks	Remark

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(e) Look at the diagram.

Only one of the food molecules can be broken down by one of the enzymes present.

- Select the enzyme and the food molecule it breaks down.
- Name the molecules produced by this breakdown.
- Explain your choice using your knowledge of enzyme action.

In this question you will be assessed on your written communication skills, including the use of specialist scientific terms.

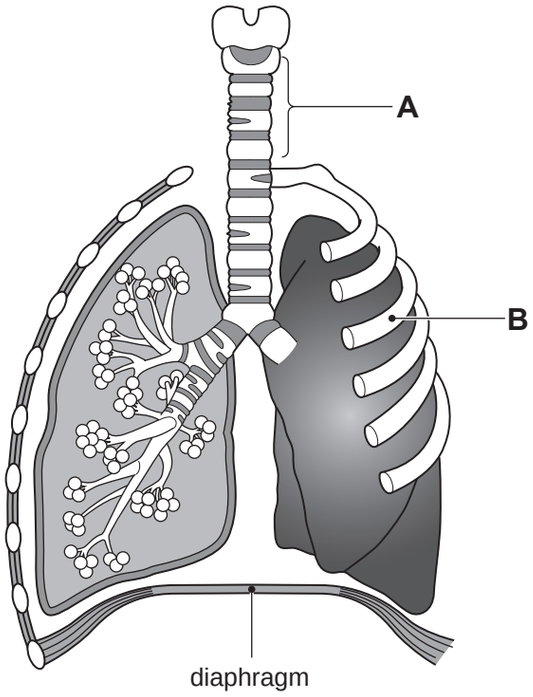
[6]

Examiner Only	
Marks	Remark
Total Question 8	

[Turn over

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9 The diagram shows part of the respiratory system.



© OCR Gateway GCSE Biology by S Broadley, S Hocking, M Matthews, published by Oxford University Press, ISBN 978 0199135684

Look at the diagram.

(a) Name parts **A** and **B**.

A _____ [1]

B _____ [1]

The diaphragm changes when you breathe in and out.

(b) Describe these changes.

Breathe in _____

_____

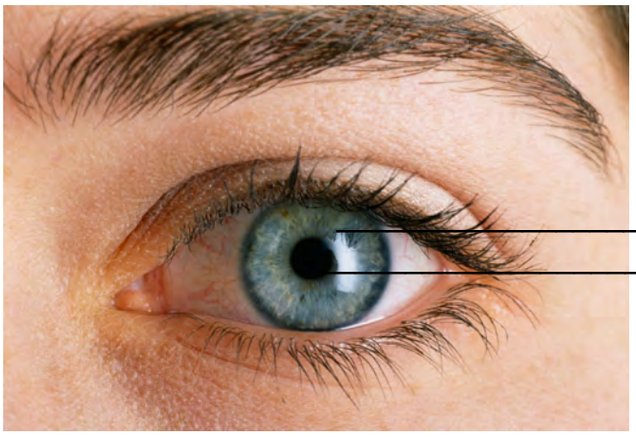
Breathe out _____

_____ [2]

Examiner Only	
Marks	Remark
Total Question 9	

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10 The photograph shows the front of a human eye in bright light.



© Jupiterimages/Photos.com/ Thinkstock

Look at the photograph.

(a) Name parts **A** and **B**.

A _____ [1]

B _____ [1]

(b) The bright light is switched off.

(i) Describe what happens to **part B**.

_____ [1]

(ii) Explain why this change in **B** is necessary.

_____

_____

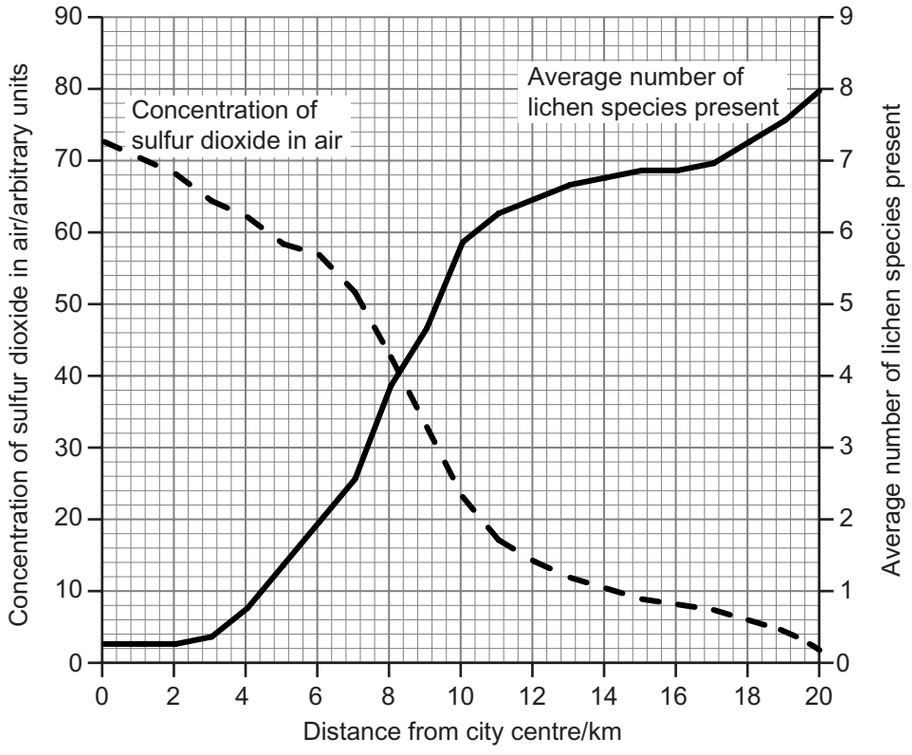
_____ [2]

Examiner Only	
Marks	Remark
Total Question 10	

[Turn over

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11 The graph shows the concentration of sulfur dioxide in the air and the average number of lichen species present on trees at different distances from a city centre.



Look at the graph.

(a) The concentration of sulfur dioxide in the air changes as you move away from the city centre.

Describe the change.

_____

_____

_____ [1]

Examiner Only	
Marks	Remark

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(b) The graph shows that some species of lichens tolerate high concentrations of sulfur dioxide in the air.

Give data from the graph which supports this conclusion.

_____

_____

_____ [2]

(c) Give **one** source of sulfur dioxide in air.

_____ [1]

(d) Species such as lichens can be used to monitor air pollution.

What term is used to describe species like these?

_____ [1]

Examiner Only	
Marks	Remark
Total Question 11	

[Turn over

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12 The table shows the loss of vitamin C content of four types of salad leaves stored for 10 days after picking.

Type of salad leaf	Vitamin C content per 100 g of salad leaves/mg		Percentage loss of vitamin C
	Day 0	Day 10	
Green lettuce	0.10	0.09	
Wild rocket	72.97	3.55	95.10
Lamb's lettuce	59.18	13.61	77.00
Red lettuce	0.07	0.07	0.00

Look at the table.

(a) **Calculate the percentage loss** of vitamin C content in green lettuce.

Show your working.

Write your answer in the table. [2]

(b) **Use data from the table** to explain which type of salad leaf is most suitable for use after storing for 10 days.

_____

_____

_____

_____ [2]

Examiner Only

Marks	Remark

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(c) A bag of fresh mixed salad leaves has a vitamin C content of 20 mg per 100 g.

A portion of fresh salad leaves weighs 60 g.

(i) Calculate the mass of vitamin C in a 60 g portion of fresh mixed salad leaves.

Show your working.

Mass _____ mg [1]

An adult is advised to have a daily intake of 50 mg of vitamin C.

(ii) What percentage of their daily vitamin C is provided by this portion of fresh mixed salad leaves?

Show your working.

Percentage _____ [1]

THIS IS THE END OF THE QUESTION PAPER

Examiner Only	
Marks	Remark
Total Question 12	

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For Examiner's use only	
Question Number	**Marks**
1	
2	
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9	
10	
11	
12	
Total Marks	

Examiner Number

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Rewarding Learning

General Certificate of Secondary Education
2014

GCSE Biology

Unit 1

Foundation Tier

[GBY11]

FRIDAY 6 JUNE, AFTERNOON

MARK SCHEME

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General Marking Instructions

Introduction

Mark schemes are published to assist teachers and students in their preparation for examinations. Through the mark schemes teachers and students will be able to see what examiners are looking for in response to questions and exactly where the marks have been awarded. The publishing of the mark schemes may help to show that examiners are not concerned about finding out what a student does not know but rather with rewarding students for what they do know.

The Purpose of Mark Schemes

Examination papers are set and revised by teams of examiners and revisers appointed by the Council. The teams of examiners and revisers include experienced teachers who are familiar with the level and standards expected of students in schools and colleges.

The job of the examiners is to set the questions and the mark schemes; and the job of the revisers is to review the questions and mark schemes commenting on a large range of issues about which they must be satisfied before the question papers and mark schemes are finalised.

The questions and the mark schemes are developed in association with each other so that the issues of differentiation and positive achievement can be addressed right from the start. Mark schemes, therefore, are regarded as part of an integral process which begins with the setting of questions and ends with the marking of the examination.

The main purpose of the mark scheme is to provide a uniform basis for the marking process so that all the markers are following exactly the same instructions and making the same judgements in so far as this is possible. Before marking begins a standardising meeting is held where all the markers are briefed using the mark scheme and samples of the students' work in the form of scripts. Consideration is also given at this stage to any comments on the operational papers received from teachers and their organisations. During this meeting, and up to and including the end of the marking, there is provision for amendments to be made to the mark scheme. What is published represents this final form of the mark scheme.

It is important to recognise that in some cases there may well be other correct responses which are equally acceptable to those published: the mark scheme can only cover those responses which emerged in the examination. There may also be instances where certain judgements may have to be left to the experience of the examiner, for example, where there is no absolute correct response – all teachers will be familiar with making such judgements.

					AVAILABLE MARKS
1	**(a)**	Sun/light;		[1]	
	(b)	Feeding/consumption/transfer of chemicals (nitrogen/carbon)/ transfer energy;		[1]	
	(c)	Any **two** from: Trap light/photosynthesise; [1] Make food (/glucose/sugar/starch)/provide energy for/to other animals/organisms; [1]		[2]	4
2	**(a)**	A – Stomach;		[1]	
		B – Colon;		[1]	
		Reject: large intestine			
	(b)	**(i)** **Ileum** – Digestion (/specific example described)/absorption of digested foods (/specific example described); Accept: Allows digested food to pass into blood;		[1]	
		(ii) **Rectum** – Store faeces/undigested materials (/unabsorbed foods);		[1]	4
3	**(a)**	Light (intensity);		[1]	
	(b)	**(i)** Oxygen;		[1]	
		(ii) Bubbles are not all same size/are different sizes;		[1]	
		(iii) Glucose/sugar/starch;		[1]	
	(c)	Chloroplast;		[1]	5
4	Chloroplast – ✗; ✓;		[2]		
	Cell wall – ✗; ✓;		[2]		
	Cell membrane – ✓;		[1]		
	Nucleus – ✗;		[1]	[6]	6

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					AVAILABLE MARKS
5	**(a)**	**(i)**	15;	[1]	
		(ii)	Soda bread; [1] greater rise in temperature of water/more energy; [1]	[2]	
	(b)		Any **three** pairs from: More protein; More growth; **or** Less carbohydrate; Reduced risk of obesity/diabetes; **or** Less fat; Reduced risk of obesity, CHD, CVD; **or** Increased fibre; Reduced risk of constipation/bowel cancer; **or** Less salt; Reduced risk of heart disease/CVD/heart attack/high blood pressure/stroke; Award an explanation only once and when linked to correct, appropriate evidence.	[6]	9

						AVAILABLE MARKS
6	**(a)**	**(i)**	A – Respiration;		[1]	
			B – Photosynthesis;		[1]	
			C – Fossilization;		[1]	
		(ii)	**Traps** carbon in fossil fuels;		[1]	
	(b)	**(i)**	Any **two** from: Respiration; Burning fossil fuels; Deforestation;		[2]	
		(ii)	Appropriate line of best fit;		[1]	
		(iii)	Any **two** from: Loss of habitat; Extinction of (Arctic) species/named example (polar bear); Flooding/rising sea levels;		[2]	9
7	**(a)**		The range of living organisms/species/animals **and** plants;		[1]	
	(b)	**(i)**	Quadrat;		[1]	
		(ii)	Pitfall trap;		[1]	
	(c)	**(i)**	Accurate plots;	[1]		
			Shading;	[1]	[2]	
		(ii)	More **of both** species/biodiversity in deciduous/B woodland;	[1]		
			More crawling insects than plants in **both** woodland areas;	[1]	[2]	
		(iii)	Light ✓;	[1]		
			Soil water ✓	[1]		
			Minerals ✓;	[1]	[3]	10

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8 **(a)** Iodine (solution); [1]

(b) Temperature; [1]

(c) Starch is broken down/digested; [1]

(d) **(i)** Sugar/glucose/reducing sugar; [1]

(ii) Heat (Benedict's);
Blue; to brick red; [3]

(e) **Indicative content:**

1. Enzyme C;
2. (C) breaks down protein molecule;
3. into amino acids;
4. active site (of C);
5. because C fits/complementary/shape to amino acid sequence in protein (when they collide);
6. Lock and key;
7. Enzymes specific;
8. Active sites of other enzymes (/A and C) don't fit any of the food molecules;

Response	**Marks**
Candidates **must use appropriate, specialist terms** throughout **using at least FIVE 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 **using THREE 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 **using some or all of the above points**. The spelling, punctuation and grammar, form and style are of a **limited standard**.	[1]–[2]
Response not worthy of credit**.**	[0]

[6]

AVAILABLE MARKS

13

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					AVAILABLE MARKS
9	**(a)**	A – Trachea;		[1]	
		B – Rib;		[1]	
	(b)	Breathe in – diaphragm contracts/flattens;	[1]		
		Breathe out – diaphragm relaxes/moves up/becomes dome-shaped;	[1]	[2]	4
10	**(a)**	A – Iris;		[1]	
		B – Pupil;		[1]	
	(b)	**(i)** B – pupil larger;		[1]	
		(ii) More light enters eye;	[1]		
		So an image can be formed/seen on retina;	[1]	[2]	5
11	**(a)**	As the distance (from the centre) increases, the concentration of SO_2 decreases;		[1]	
	(b)	Accept: a small/constant (average) number of lichen species remain/are found/live/exist near the city centre;	[1]		
		Lichen species does not become 0 in city centre;			
		Between 0 and 2 km;	[1]	[2]	
	(c)	Burning fossil fuels/petrol/diesel (in vehicles)		[1]	
	(d)	Indicator (species);		[1]	5
12	**(a)**	0.10 – 0.09 = 0.01;	[1]		
		(0.01 × 100) ÷ 0.10 = 10%	[1]	[2]	
		Accept 10% as [2]			
	(b)	Red lettuce;	[1]		
		Lose 0% of their vitamin C (when stored for 10 days);	[1]	[2]	
	(c)	**(i)** (20 ÷ 100) × 60 = 12;		[1]	
		(ii) 12 ÷ 50 **or** 24%;		[1]	6
		E.c.f.: Answer **(i)** × 2;			
				Total	**80**

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Rewarding Learning

Centre Number

Candidate Number

General Certificate of Secondary Education
2013

Biology

Unit 1

Foundation Tier

[GBY11]

GBY11

WEDNESDAY 5 JUNE, AFTERNOON

TIME

1 hour 15 minutes.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
You must answer the questions in the spaces provided. Do not write outside the box, around each page or on blank pages.
Complete in blue or black ink only. **Do not write with a gel pen**.
Answer **all twelve** questions.

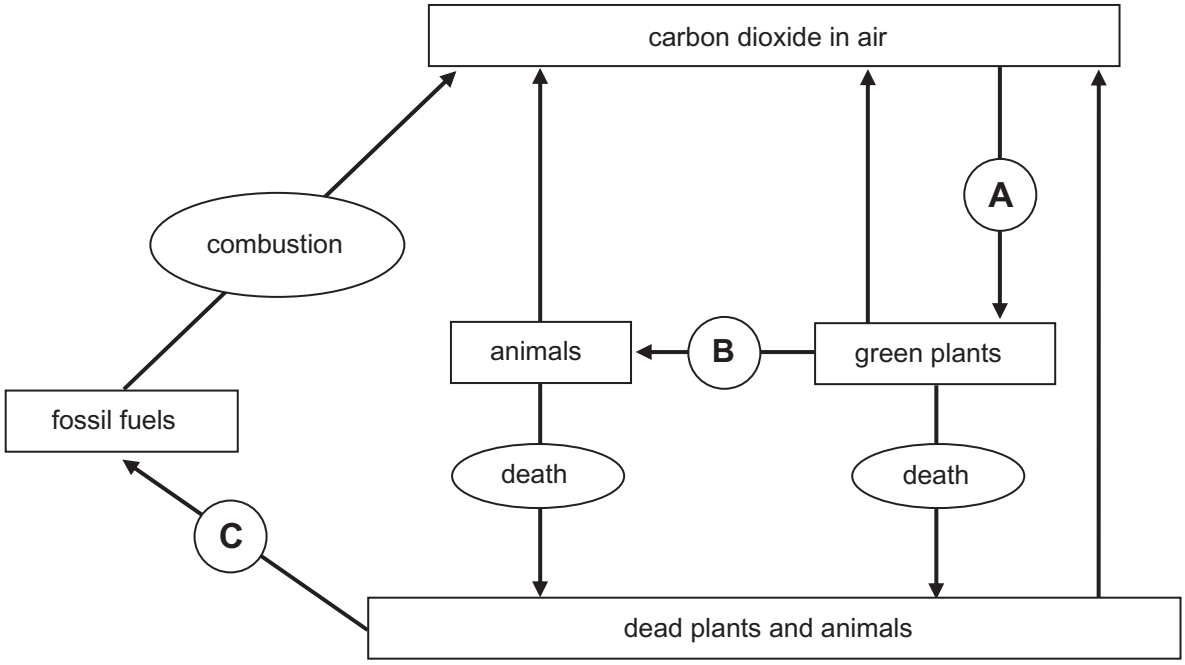
INFORMATION FOR CANDIDATES

The total mark for this paper is **80**.
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.
Quality of written communication will be assessed in questions **4 and 12**.

8213

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1 The diagram shows part of the carbon cycle.



(a) Name the processes **A**, **B** and **C**.

A _____ [1]

B _____ [1]

C _____ [1]

(b) Give **one** reason why carbon dioxide in the air is increasing.

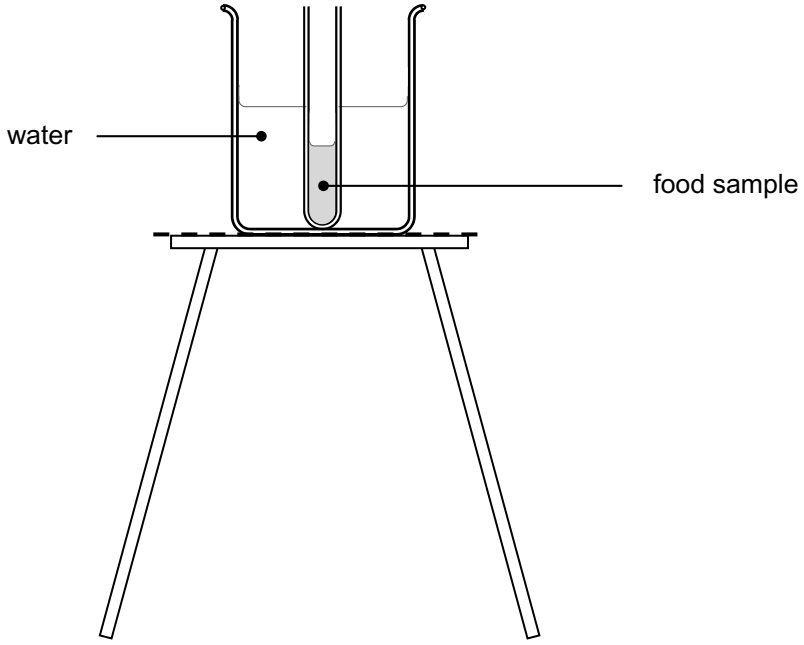
_____

_____ [1]

Examiner Only	
Marks	Remark
Total Question 1	

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2 The diagram shows **some** apparatus used to test a food sample for sugar.



(a) Describe how you would test a food sample for the presence of sugar.

_____

_____

_____

_____ [2]

(b) Describe the **colour change** when sugar is present.

_____

_____

_____ [2]

Examiner Only	
Marks	Remark
Total Question 2	

[Turn over

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Examiner Only	
Marks	Remark

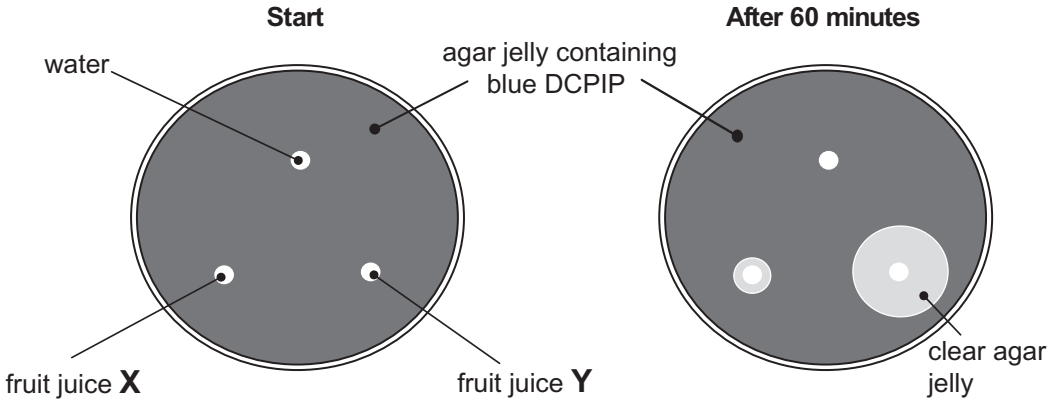
3 A Petri dish was filled with agar jelly containing blue DCPIP.

Three holes were cut out of the agar jelly.

One hole was filled with 1 cm^3 of water, one with 1 cm^3 of fruit juice **X** and one with 1 cm^3 of fruit juice **Y**.

The fruit juices contained different concentrations of vitamin C.

The Petri dish was left for 60 minutes.



Use the results found after 60 minutes to help answer the following questions.

(a) (i) What conclusion can be drawn about the concentration of vitamin C in fruit juice **Y** compared to fruit juice **X**?

_____

_____ [1]

(ii) How did you reach this conclusion?

_____

_____ [1]

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(iii) Explain the changes shown in the jelly around the fruit juices.

_____

_____

_____ [2]

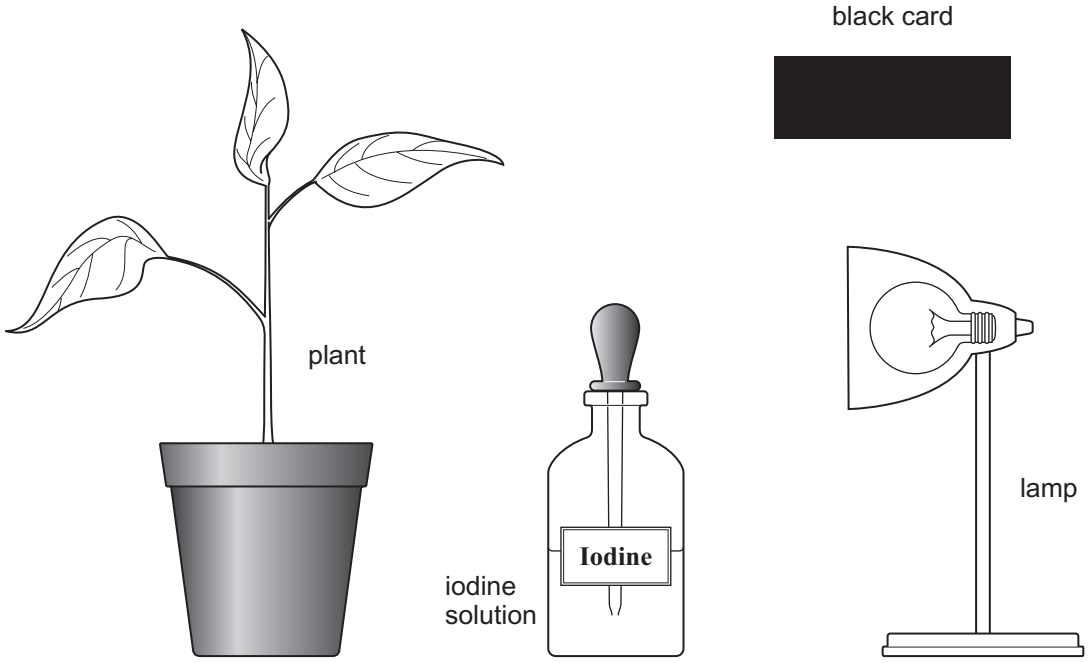
(b) Why was water added to one of the holes?

_____ [1]

Examiner Only	
Marks	Remark
Total Question 3	

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4 The diagrams show the apparatus used in an experiment to test where starch is present in a leaf.



Examiner Only	
Marks	Remark

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Describe and explain how the apparatus could be used to find if light is needed for photosynthesis.

In this question, you will be assessed on your written communication skills, including the use of specialist scientific terms.

[6]

Examiner Only	
Marks	Remark
Total Question 4	

[Turn over

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Examiner Only	
Marks	Remark

5 Living organisms release energy by aerobic respiration.

(a) (i) Where in the body does aerobic respiration take place?

_____ [1]

(ii) Complete the word equation for aerobic respiration.

glucose + [ ] → carbon dioxide + [ ] + energy

[2]

(iii) Give **one** way living organisms use the energy released by aerobic respiration.

_____ [1]

The table shows the mass of four different animals and the energy they use.

Animal	Mass/kg	Energy used per kilogram of body mass per day/kJ	Total energy used per day/kJ
Pig	128	80	
Man	64	134	8576
Dog	15		3240
Mouse	0.02	2736	54.72

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(b) (i) Calculate the missing energy values. Complete the table by writing the answers in the empty boxes. [2]

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(ii) Describe the relationship shown in the table between the mass of the animal and the

energy used per kilogram of body mass per day.

_____

_____

_____ [1]

total amount of energy used per day.

_____

_____

_____ [1]

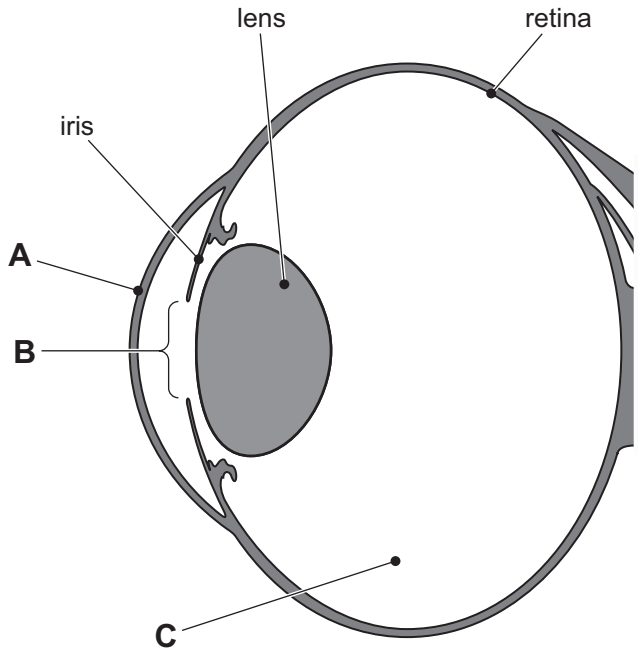
Examiner Only	
Marks	Remark
Total Question 5	

[Turn over

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6 The diagram shows a section through an eye.

Examiner Only	
Marks	Remark



© Dr C J Clegg – Mammals Structure & Function by Dr C J Clegg, published by John Murray, 1998.

(a) Name parts **A**, **B** and **C**.

A _____ [1]

B _____ [1]

C _____ [1]

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(b) Describe the function of the

iris. _____

_____

_____ [2]

lens. _____

_____

_____ [2]

retina. _____

_____ [1]

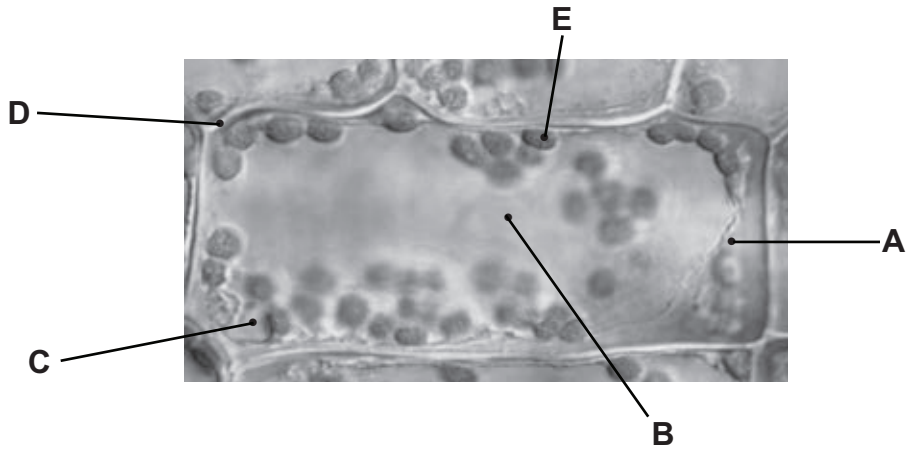
Examiner Only	
Marks	Remark
Total Question 6	

[Turn over

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7 The photograph shows a leaf cell.

Examiner Only	
Marks	Remark



© J C Revy, ISM / Science Photo Library

(a) (i) Name parts **A** and **B**.

A _____ [1]

B _____ [1]

(ii) Give the letter of the part which contains

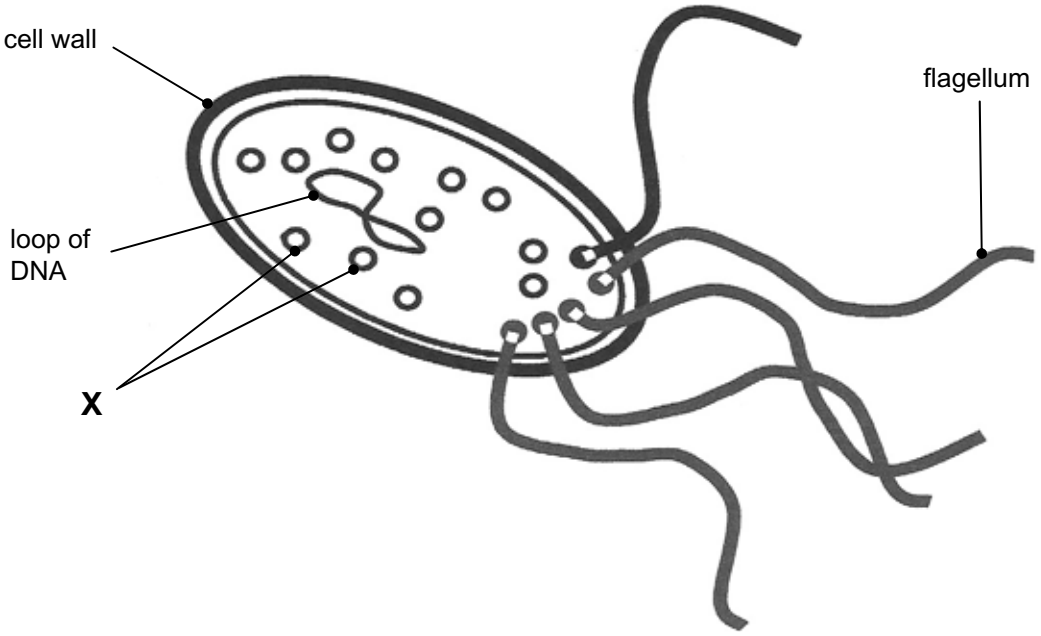
cellulose. _____ [1]

chlorophyll. _____ [1]

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(b) The diagram shows a Salmonella bacterium.

Examiner Only	
Marks	Remark



(i) Name the structures labelled **X**.

_____ [1]

Plants do not have these structures.

(ii) Give **one other** way the Salmonella bacterial cell differs from a plant cell.

_____

_____ [1]

[Turn over

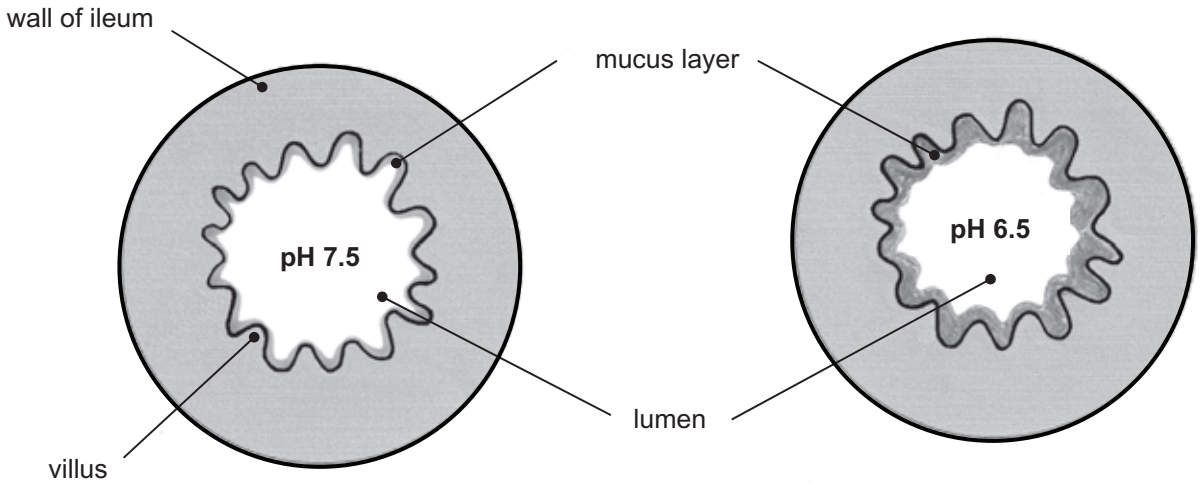
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Salmonella bacteria can cause food poisoning.

Some probiotic drinks contain living bacteria.

Manufacturers claim these can help reduce the risk of Salmonella food poisoning.

The diagrams show a section through the ileum of a person who does not take probiotic drinks and one who does.



without probiotics **with probiotics**

(c) **Use evidence from the diagrams** to describe and explain **two** ways probiotics may help reduce the number of Salmonella bacteria in the ileum.

1. Description _____

_____

Explanation _____

_____

2. Description _____

_____

Explanation _____

_____ [4]

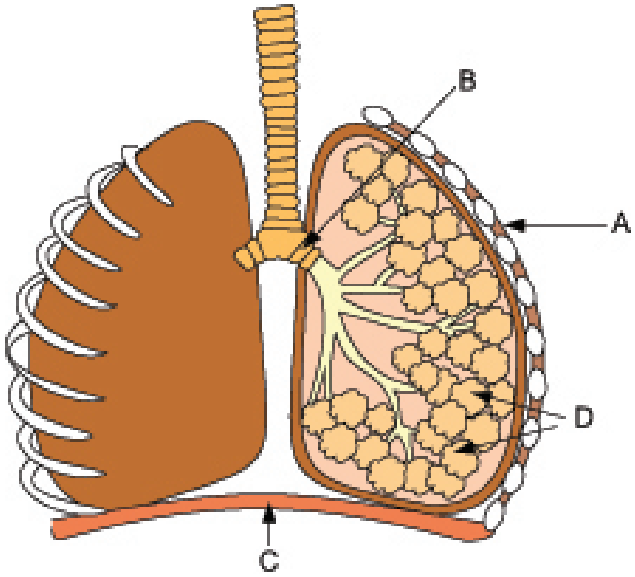
Examiner Only	
Marks	Remark
Total Question 7	

DO NOT WRITE ON THIS PAGE

(Questions continue overleaf)

8 The diagram shows part of the respiratory system.

Examiner Only	
Marks	Remark



© Focus Educational Software Ltd

(a) Name parts **A**, **B**, **C** and **D**.

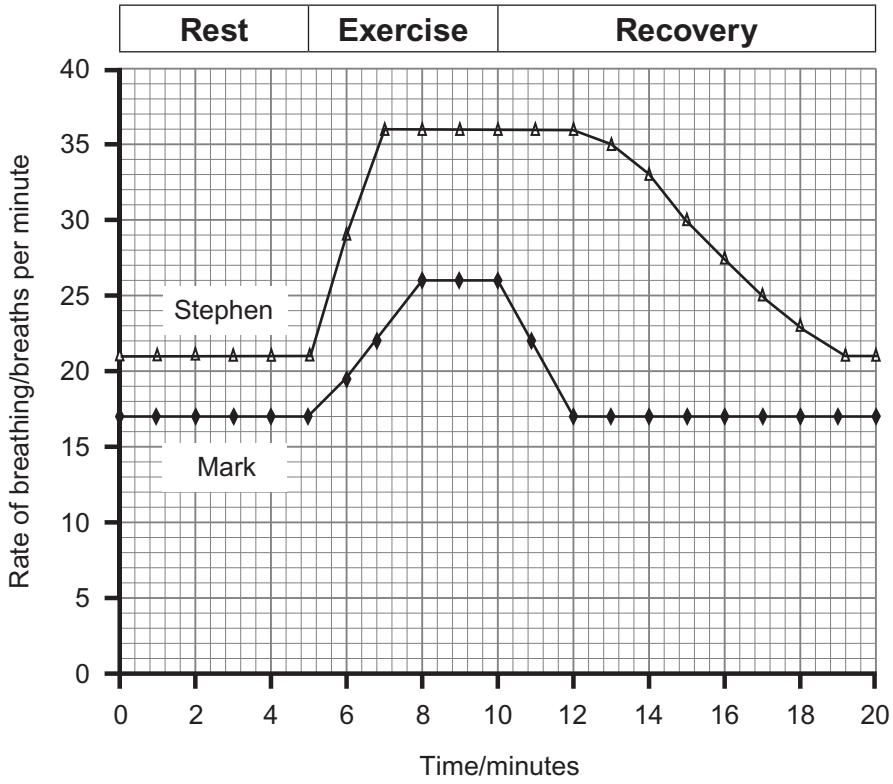
A _____ [1]

B _____ [1]

C _____ [1]

D _____ [1]

The graph shows the results of an investigation into the effect of exercise on the breathing rate of two pupils Stephen and Mark.



(b) Calculate the increase in Stephen's breathing rate during exercise.

Show your working.

_____ breaths per minute [2]

Examiner Only

Marks	Remark

[Turn over

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Respiratory fitness can be described as the ability to exercise with **little change** in breathing rate.

Examiner Only	
Marks	Remark

(c) Suggest which pupil in this investigation is fitter.
Give **three** reasons for your choice, **using data from the graph**.

Pupil _____

_____

_____

_____

_____

_____ [3]

(d) Describe how the pupils would have carried out this investigation to obtain these results.

_____

_____

_____

_____

_____

_____

_____ [4]

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During the investigation the percentage of oxygen in the air exhaled by Stephen was also measured.

The table shows the percentage of oxygen in the air exhaled by Stephen at 4 and 8 minutes during the investigation.

Time/minutes	Percentage of oxygen in exhaled air
4	16
8	12

(e) Look at the table and the graph.

Suggest why there is a difference in the percentage of oxygen exhaled between 4 and 8 minutes.

_____

_____

_____ [2]

Examiner Only	
Marks	Remark
Total Question 8	

[Turn over

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9 **(a)** Name **two** chemical elements found in all food molecules.

_____ [1]

(b) Complete the table about components of the diet.

Component	Example	Source	Function	
Carbohydrate	Lactose		Energy	[1]
	D	Milk	Growth of bones and teeth	[1]
Mineral		Red meat	Needed for haemoglobin in red blood cells	[1]

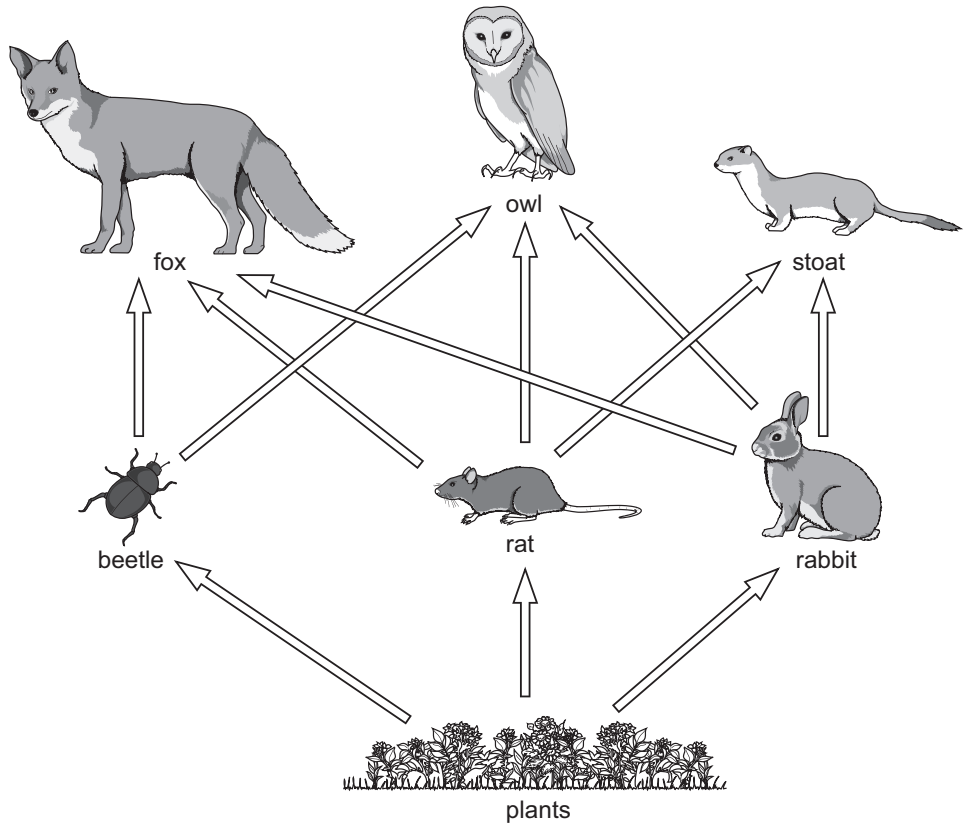
Examiner Only	
Marks	Remark
Total Question 9	

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(Questions continue overleaf)

10 The diagram shows part of a food web found in a forest ecosystem.

Examiner Only	
Marks	Remark



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(a) Why are plants important in a food web?

_____

_____

_____ [2]

(b) What do the arrows in the food web represent?

_____

_____ [1]

After a very severe winter a large number of owls died.

(c) Explain how this may affect the number of stoats.

_____

_____

_____ [2]

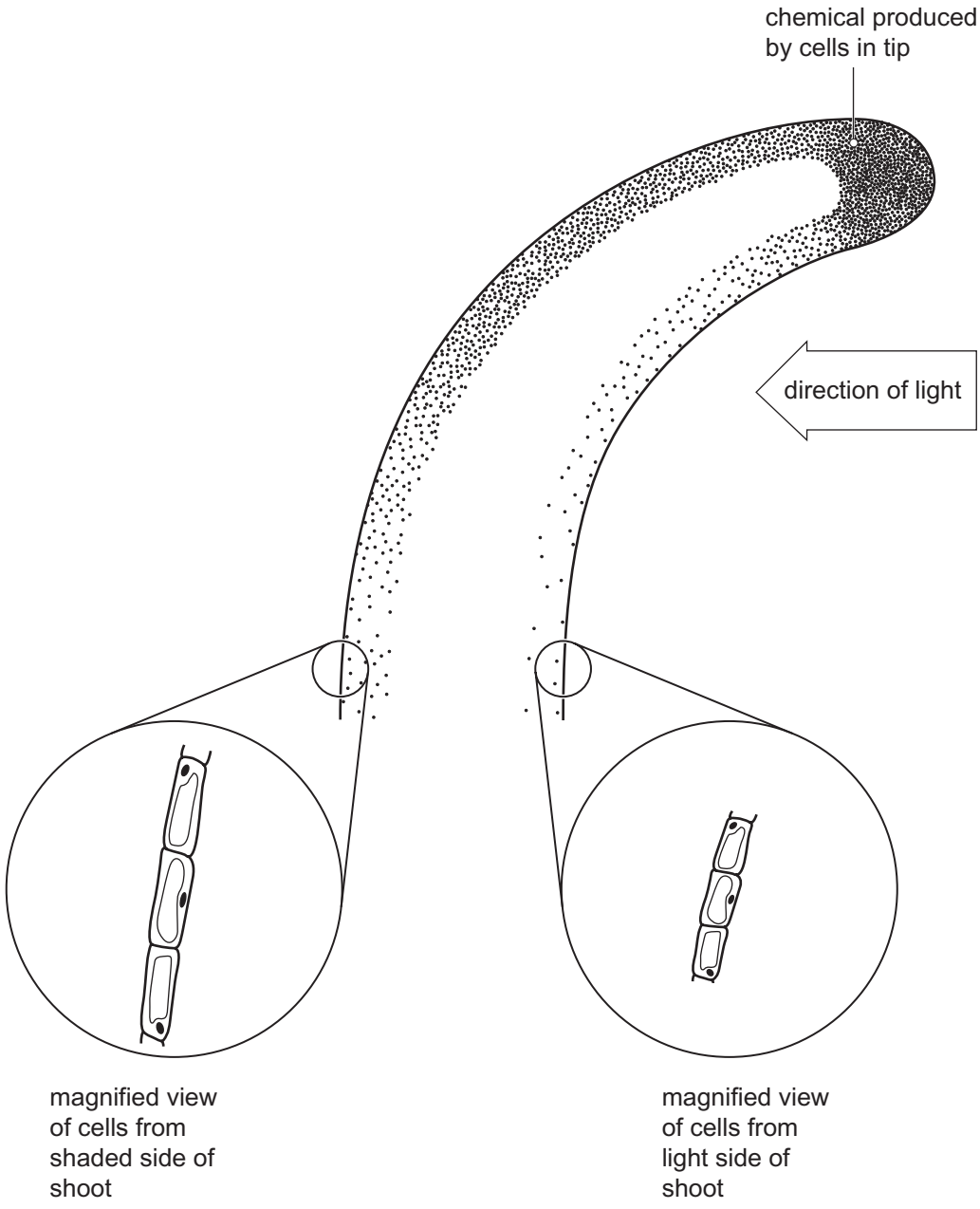
Examiner Only	
Marks	Remark
Total Question 10	

[Turn over

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11 The diagram shows a section of a shoot growing in one-sided light.

Examiner Only	
Marks	Remark



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(a) Name the chemical produced by cells in the tip.

_____ [1]

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Use the diagram to answer the following questions.

Examiner Only	
Marks	Remark

(b) (i) Compare the distribution of the chemical in the light and shaded side of the shoot below the tip.

_____

_____ [1]

(ii) How has the chemical affected the cells in the shaded side of the shoot?

_____

_____ [1]

(c) Explain the advantage to the plant of bending towards light.

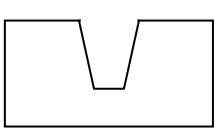
_____

_____

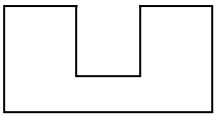
_____ [2]

Total Question 11

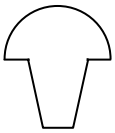
12 The diagram shows the shape of two enzyme molecules and a substrate molecule.



Enzyme A

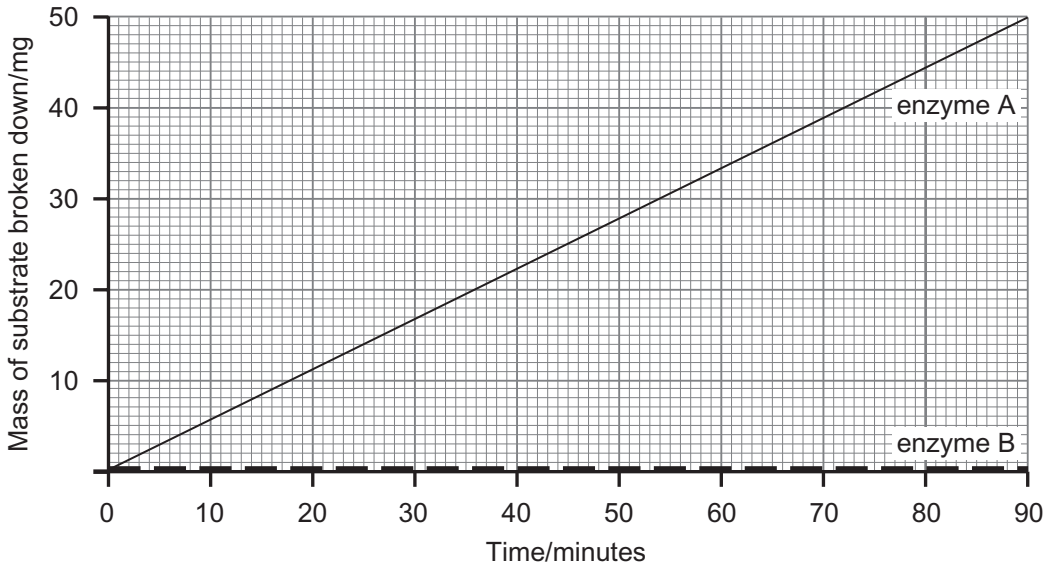


Enzyme B



Substrate

The graph shows the mass of substrate broken down by each enzyme over 90 minutes.



Examiner Only

Marks	Remark

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Use the information in the diagrams and your knowledge to help explain the shape of the two lines on the graph.

In this question, you will be assessed on your written communication skills, including the use of specialist scientific terms.

[6]

Examiner Only	
Marks	Remark
Total Question 12	

THIS IS THE END OF THE QUESTION PAPER

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For Examiner's use only	
Question Number	**Marks**
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
Total Marks	

Examiner Number

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Rewarding Learning

General Certificate of Secondary Education
2013

Biology

Unit 1

Foundation Tier

[GBY11]

WEDNESDAY 5 JUNE, AFTERNOON

MARK SCHEME

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General Marking Instructions

Introduction

Mark schemes are published to assist teachers and students in their preparation for examinations. Through the mark schemes teachers and students will be able to see what examiners are looking for in response to questions and exactly where the marks have been awarded. The publishing of the mark schemes may help to show that examiners are not concerned about finding out what a student does not know but rather with rewarding students for what they do know.

The Purpose of Mark Schemes

Examination papers are set and revised by teams of examiners and revisers appointed by the Council. The teams of examiners and revisers include experienced teachers who are familiar with the level and standards expected of students in schools and colleges.

The job of the examiners is to set the questions and the mark schemes; and the job of the revisers is to review the questions and mark schemes commenting on a large range of issues about which they must be satisfied before the question papers and mark schemes are finalised.

The questions and the mark schemes are developed in association with each other so that the issues of differentiation and positive achievement can be addressed right from the start. Mark schemes, therefore, are regarded as part of an integral process which begins with the setting of questions and ends with the marking of the examination.

The main purpose of the mark scheme is to provide a uniform basis for the marking process so that all the markers are following exactly the same instructions and making the same judgements in so far as this is possible. Before marking begins a standardising meeting is held where all the markers are briefed using the mark scheme and samples of the students' work in the form of scripts. Consideration is also given at this stage to any comments on the operational papers received from teachers and their organisations. During this meeting, and up to and including the end of the marking, there is provision for amendments to be made to the mark scheme. What is published represents this final form of the mark scheme.

It is important to recognise that in some cases there may well be other correct responses which are equally acceptable to those published: the mark scheme can only cover those responses which emerged in the examination. There may also be instances where certain judgements may have to be left to the experience of the examiner, for example, where there is no absolute correct response – all teachers will be familiar with making such judgements.

				AVAILABLE MARKS
1	**(a)**	A – photosynthesis; B – feeding; C – fossilisation;	[1] [1] [1]	
	(b)	(Increased) burning of fossil fuels/combustion; Accept: Combustion (and respiration) greater than photosynthesis/more deforestation;	[1]	4
2	**(a)**	Add Benedict's solution; Boil/heat (in waterbath);	[1] [1]	
	(b)	Blue; To brick red;	[1] [1]	4
3	**(a)**	**(i)** **Y** contains higher concentration/amount of vitamin C;	[1]	
		(ii) **Y** has larger **circle** of **clear** agar;	[1]	
		(iii) Any **two** from **DCPIP** blue; Vitamin C **decolourises**/**makes** DCPIP go clear; Vitamin C moves out by diffusion; From high vitamin C concentration to a low vitamin C concentration/down concentration gradient;	[2]	
	(b)	Control/comparison/fair test;	[1]	5

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4 Indicative content:

1. Place in dark/cupboard for 48 hours;
2. To destarch (leaf);
3. Cover part of leaf with card;
4. Expose to light;
5. Test leaf for starch/described;
6. Using iodine (solution);
7. Under card yellow/no colour change (shows no starch);
8. Light blocked by card so no photosynthesis;
9. Other parts blue-black (shows starch/photosynthesis);

Response	Marks
Candidates **must use** appropriate, **specialist terms** throughout to describe the movement of CO_2 into the site of photosynthesis **using at least five 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 the movement of CO_2 into the site of photosynthesis **using at least three 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 the movement of CO_2 into the site of photosynthesis **using some or all of the above points**. The spelling, punctuation and grammar, form and style are of a **limited** standard.	[1]–[2]
Response not worthy of credit**.**	[0]

[6] — AVAILABLE MARKS: 6

5 (a) (i) (Body) cells; [1]

(ii) Oxygen/O_2; [1]
Water/H_2O; [1] [2]

(iii) Movement/growth/reproduction/heat/active transport; [1]

(b) (i) 10240; [1]
216; [1] [2]

(ii) As the mass of animal **decreases** energy used (per kilogram) of body mass **increases**; **Accept** converse [1]
As the mass of animal **decreases** total energy used per day **decreases**; **Accept** converse [1]

AVAILABLE MARKS: 8

6 (a) **A** – cornea; [1]
B – pupil; [1]
C – vitreous humour; [1]

(b) **Iris** – Adjust size of **pupil**; [1]
Control amount of light entering; [1]
Lens – Any **two**
Changes thickness/shape; [1]
Focus/bends (light) onto **retina**; [1]
Retina – Senses light; [1]

AVAILABLE MARKS: 8

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					AVAILABLE MARKS
7	**(a)**	**(i)**	A – Cytoplasm;	[1]	
			B – Vacuole;	[1]	
		(ii)	D;	[1]	
			E;	[1]	
	(b)	**(i)**	Plasmids;	[1]	
		(ii)	Cell wall not cellulose/no nucleus;	[1]	
	(c)		Probiotics lower pH/make ileum(/intestine) more acidic;	[1]	
			(Acid conditions) **kills/slows down the reproduction** of Salmonella bacteria;	[1]	
			Probiotics increase thickness of mucus;	[1]	
			Salmonella bacteria get trapped in mucus/stuck in mucus;	[1]	10
8	**(a)**		A – Intercostal (muscle);	[1]	
			B – Bronchus;	[1]	
			C – Diaphragm;	[1]	
			D – Alveolus;	[1]	
	(b)		(36–21);	[1]	
			15;	[1]	
			Accept: correct calculation which uses ECT [= 1 mark]		
	(c)		**No mark for correct identification of Mark**		
			Mark has **lower** breathing rate at rest;		
			Smallest increase in breathing rate while exercising/from 17 to 26;	[1]	
			Fastest recovery/return to resting breathing rate/10 to12 min;	[1]	
			From 17 breaths per minute to 26 breaths per minute (compared to 21 breaths per minute to 36 breaths per minute);	[1]	
	(d)		Count breaths **per minute/every minute**;	[1]	
			During rest, (5 minutes) exercise **and** recovery;	[1]	
			Maximum of two from		
			2 pupils;		
			Repeat (3 times)/calculate average;		
			Appropriate control described;	[2]	
	(e)		More required only once		
			(during exercise/at **8 mins**) **less**/decreased O_2 **exhaled**/**more** O_2;		
			absorbed/uptake/passes into blood/transported to muscles;	[1]	
			(during exercise/at **8 mins**) **more** respiration/energy production by contracting muscle	[1]	15
9	**(a)**		Any **two** from		
			Carbon/C, Hydrogen/H, Oxygen/O;	[1]	
	(b)		Milk/dairy produce/named example;	[1]	
			Vitamin;	[1]	
			Iron;	[1]	4

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		AVAILABLE MARKS
10	**(a)** Any **two** from: Producer; Make own food/photosynthesis/absorb (use) energy from the sun; Provide food energy **for** rest of food web/consumers/chain/animals; [2]	
	(b) Energy flow; consumption/feeding/transfer of elements (C/N); [1]	
	(c) **Stoats** have more food; [1] Number of stoats increases; [1] [2]	5
11	**(a)** Auxin; [1]	
	(b) **(i)** More chemical/auxin on shaded side/dark side; [1]	
	(ii) Longer **cells**; [1]	
	(c) More light absorbed; } Require "more" only once [1] (More) photosynthesis/more/faster growth; } [1] [2]	5

12 **Indicative content:**

1. Mass of **substrate** broken down/used up by enzyme **A** (increases with time);
2. No **substrate** broken down/used up by enzyme **B**;
3. Lock and key model;
4. Substrate fits/complementary to **active** site of **A**;
5. Substrate does not fit/complementary to **active** site of **B**;
6. Enzymes are specific;
7. Increased/greater rate of **reaction rate** in **A**;
8. Enzymes are proteins/biological catalyst;

Response	Marks
Candidates **must use** appropriate, **specialist terms throughout** to explain the shape of the graph **using at least five 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 explain the shape of the graph **using at least three 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 explain the shape of the graph **using at least one of the above points**. The spelling, punctuation and grammar, form and style are of a **limited standard**.	[1]–[2]
Response not worthy of credit.	[0]

[6] 6

Total **80**

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New Specification

Rewarding Learning

Centre Number	
71	

Candidate Number

General Certificate of Secondary Education
2012

Biology

Unit 1

Foundation

[GBY11]

GBY11

WEDNESDAY 30 MAY, AFTERNOON

TIME

1 hour 15 minutes.

INSTRUCTIONS TO CANDIDATES

Use blue or black ink.
Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
Answer **all twelve** questions in the spaces provided.

INFORMATION FOR CANDIDATES

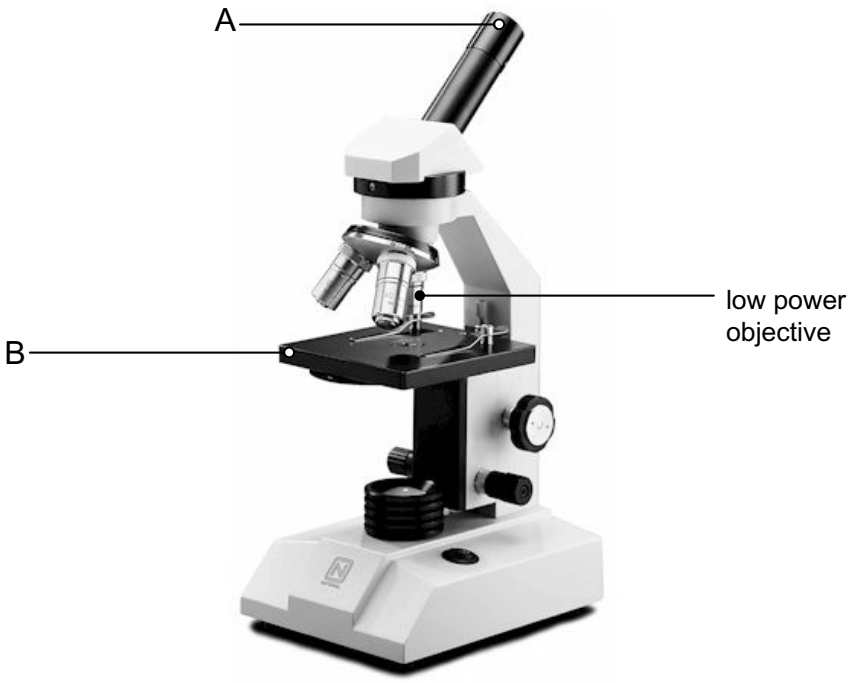
The total mark for this paper is 80.
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.
Quality of written communication will be assessed in questions **4**, **8(a)** and **12**.

For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
Total Marks	

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Examiner Only	
Marks	Remark

1 The diagram shows a microscope which can be used to examine cells.



© *Microscope World*

(a) Name parts A and B.

A _____ [1]

B _____ [1]

(b) Why is the low power objective always used first when focusing on cells on the microscope slide?

_____

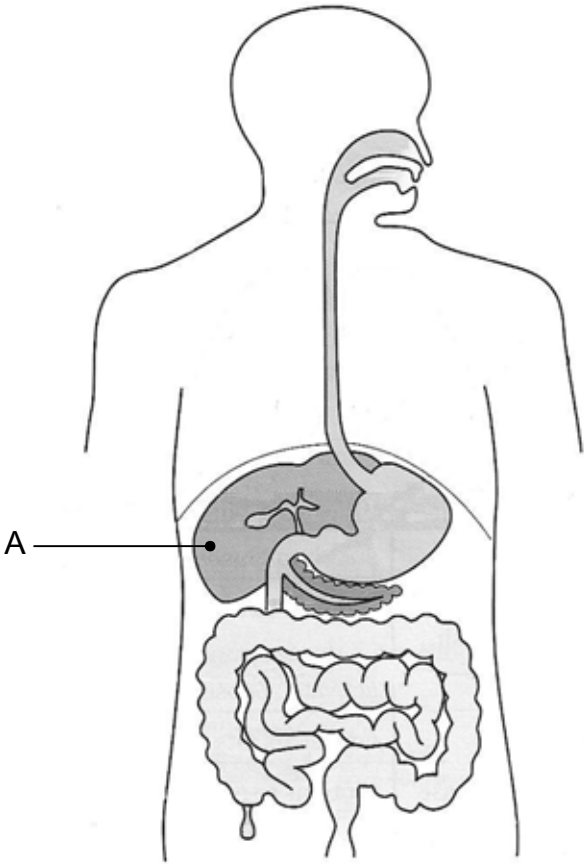
_____ [1]

(c) What else must be adjusted to get a clear view of these cells?

_____

_____ [1]

2 The diagram shows part of the human digestive system.



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ISBN 0340858257. "Reproduced by permission of Hodder Education.

(a) Name part A. _____ [1]

The stomach contains gastric juice.

(b) Name **two** substances found in gastric juice.

_____ and _____ [2]

(c) Describe how the colon is adapted for water absorption.

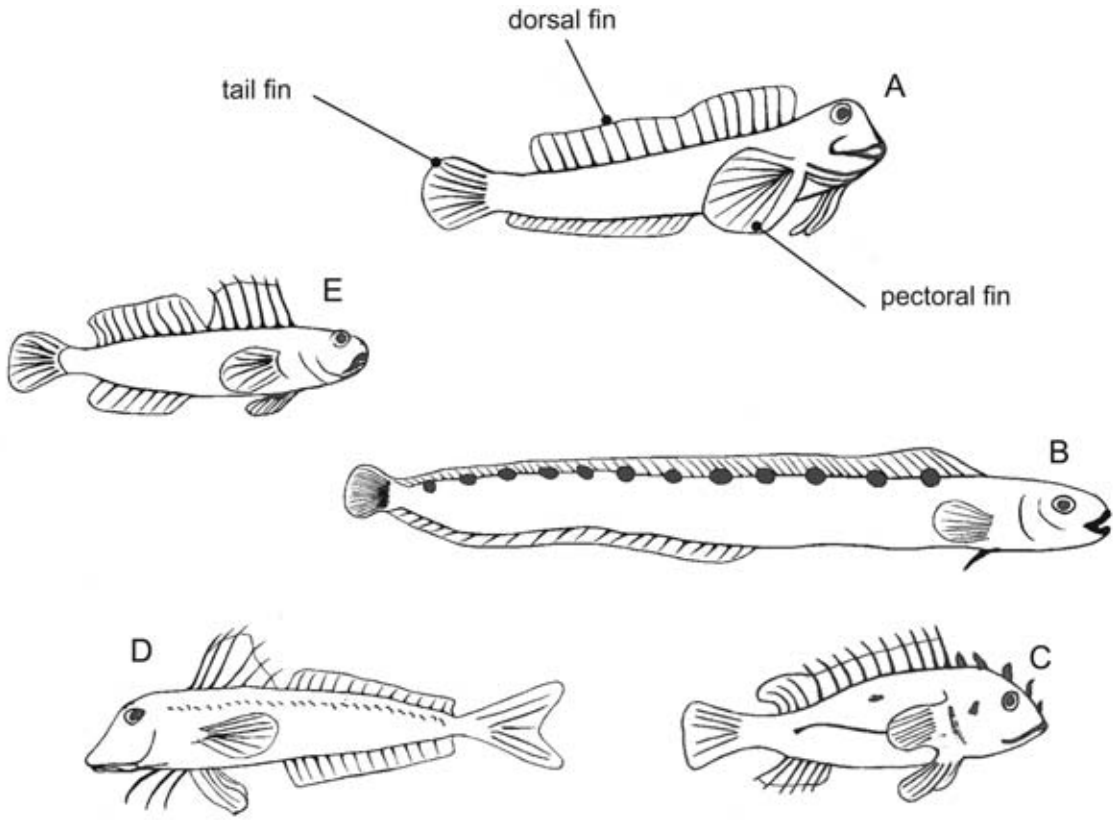
_____

_____ [1]

Examiner Only	
Marks	Remark

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3 The drawings show five fish.



(a) Use the key to identify the Goby, Blenny and Butterfish.

Place the correct letter in each box.

1.	Dorsal fin split into two parts.	go to 2	
	Dorsal fin not split into two parts.	go to 3	
2.	End of tail V-shaped.	*Gurnard*	
	End of tail not V-shaped.	*Goby*	☐
3.	Pectoral fin as wide as body.	*Blenny*	☐
	Pectoral fin not as wide as body.	go to 4	
4.	Dorsal fin joined to tail fin.	*Butterfish*	☐
	Dorsal fin not joined to tail fin.	*Scorpion fish*	

[3]

Examiner Only

Marks	Remark

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(b) **Use the key** to give **one** feature found in both the Butterfish and the Scorpion fish but not in the Blenny.

_____

_____ [1]

(c) Explain why size cannot be used to identify the fish in the key.

_____

_____ [1]

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Marks	Remark

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4 Describe how the mechanism of breathing causes the air pressure in the lungs to change when we **breathe in**.

In this question, you will be assessed on your written communication skills, including the use of specialist scientific terms.

[6]

Examiner Only	
Marks	Remark

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Examiner Only	
Marks	Remark

5 **(a)** Complete the table by

- adding **two** column headings,
- naming **one** reagent,
- describing **three** colour changes.

	Colour before food test		
Iodine	Yellow/brown		[1]
Benedict's		Brick red precipitate	[1]
Biuret	Blue		[1]
	Clear	White emulsion	[1]

[2]

Three of the reagents were used to carry out tests on three foods A, B and C.

The results are shown in the table below.
✓ = positive result ✗ = negative result

Food tested	**Reagent**		
	Iodine	**Benedict's**	**Biuret**
A	✓	✓	✗
B	✗	✓	✓
C	✓	✗	✓

(b) **(i)** Which of the foods tested contain starch?

_____ [1]

(ii) Which of the foods tested contains **both** sugar and protein?

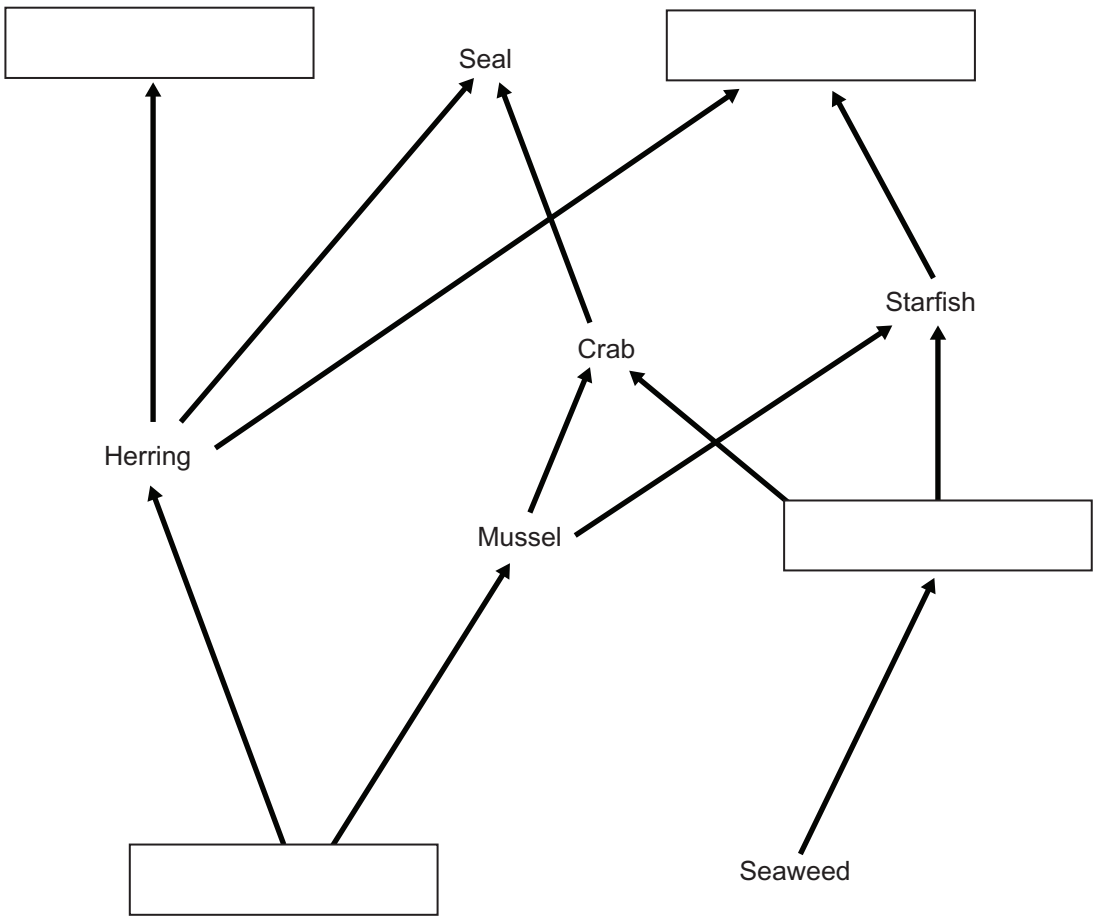
_____ [1]

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6 The table shows some marine organisms and their diet.

Organism	Diet
Dolphin	Herring
Seal	Herring and Crab
Starfish	Mussel and Limpet
Herring	Plankton
Crab	Mussel and Limpet
Limpet	Seaweed
Seagull	Herring and Starfish
Mussel	Plankton

(a) Complete the food web using the information in the table.



[4]

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Marks	Remark

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(b) What is the role of the producers in the food web?

_____

_____

_____ [2]

(c) Suggest why the seal population might decrease if the mussels were poisoned.

_____

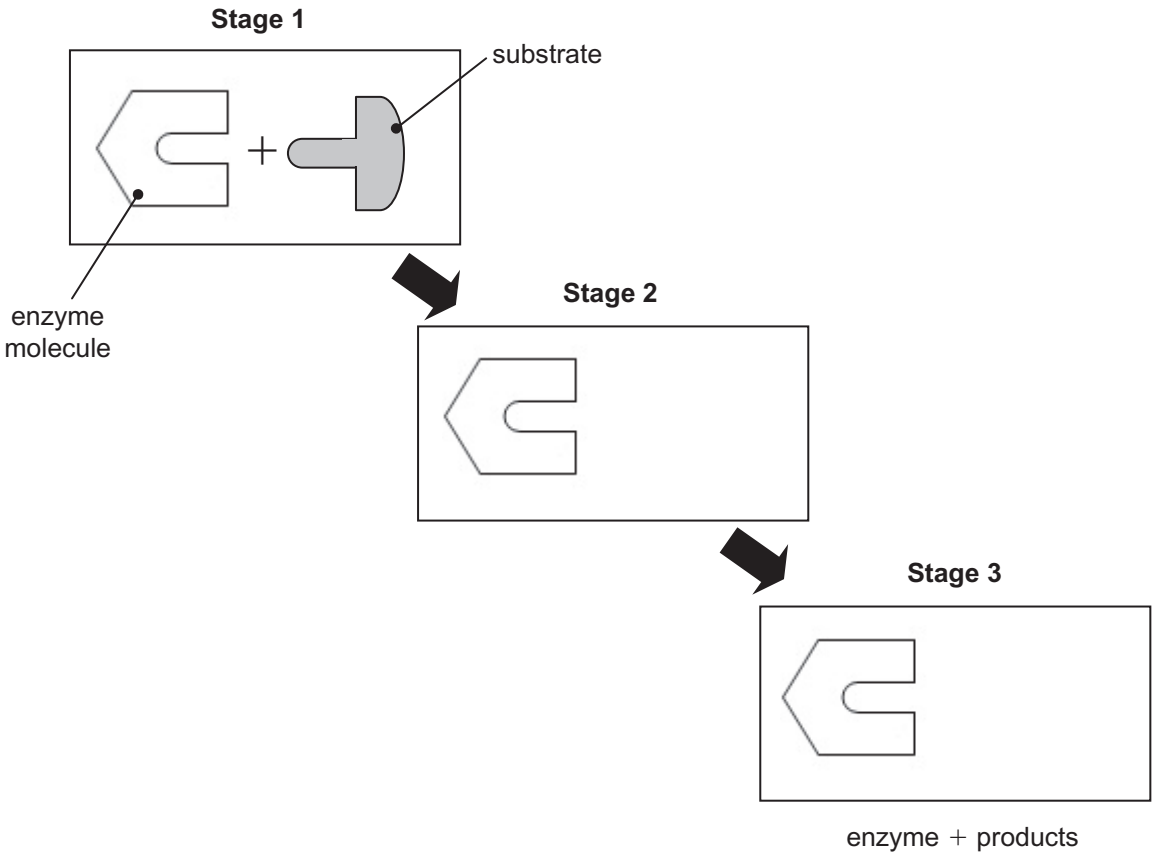
_____

_____ [2]

Examiner Only	
Marks	Remark

Examiner Only	
Marks	Remark

7 The diagram shows a model of how an enzyme molecule acts on a substrate.



(a) (i) Name this model. _____ [1]

(ii) **Complete** Stage 2 and Stage 3 of this model. [2]

A cell contains only a small amount of this enzyme, yet each enzyme molecule is able to act on thousands of substrate molecules in a minute.

(iii) Explain what happens to this enzyme molecule, after Stage 3, to allow it to act on thousands of substrate molecules.

_____

_____ [1]

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Soft-centred mint chocolates are made using enzymes. The mint centre is hard when first made so that it will not melt when covered with hot chocolate. After the chocolate has solidified the sweet is kept at 18 °C for fourteen days. During this time an enzyme called invertase breaks down the complex sugar in the mint centre making it softer and sweeter.

One manufacturer wanted to find a new enzyme to use in this process to reduce the time needed to soften the mints. Their scientists carried out experiments using four new enzymes A, B, C and D. Each experiment used the same mass of solid mint centre and the same concentration of enzyme.

The table shows the time taken by each of the new enzymes to make the mint go soft.

Enzyme	Time taken to soften the mint/days
Invertase	14
A	20
B	10
C	18
D	17

(b) (i) **Suggest** which of the new enzymes, A, B, C or D, the manufacturer would choose to reduce the time taken to soften the mints.
Give a reason for your answer.

Enzyme _____ [1]

Reason _____

_____

_____ [1]

Examiner Only

Marks	Remark

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Another scientist checked the method of the experiment and concluded that some of the factors had not been controlled.

(ii) Choose **two** factors from the list below, which should have been controlled in the manufacturer's experiments.

Place a tick (✓) in two of the boxes.

temperature ☐

humidity ☐

light intensity ☐

oxygen concentration ☐

pH ☐

softness of the mint at the end ☐

[2]

Examiner Only	
Marks	Remark

8 Vitamins are an important part of the diet.

You are provided with:
a sample of fresh orange juice,
a sample of 1 week old orange juice and
the reagent used to test for vitamin C.

(a) Describe the steps you would take to compare the amount of vitamin C in the sample of fresh orange juice with that of the 1 week old orange juice.
How would you ensure your results were reliable?

In this question, you will be assessed on your written communication skills, including the use of specialist scientific terms.

[6]

Examiner Only	
Marks	Remark

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(b) The table shows the amount of vitamin C in different fruit juices.

Fruit juice		Mass of vitamin C in 1 cm^3 of juice/mg		
		Measurement 1	**Measurement 2**	**Average**
Orange	Fresh	0.4	0.6	0.5
	Carton	0.2	0.4	0.3
	1 week old	0.1	0.1	0.1
Blackcurrant	Fresh	0.9	0.5	0.7
	Carton	0.2	0.8	0.5
	1 week old	0.3	0.5	

(i) **Complete the table** by calculating the average mass of vitamin C in the 1 week old blackcurrant juice. [1]

(ii) Explain which juice produced the least reliable results.

_____

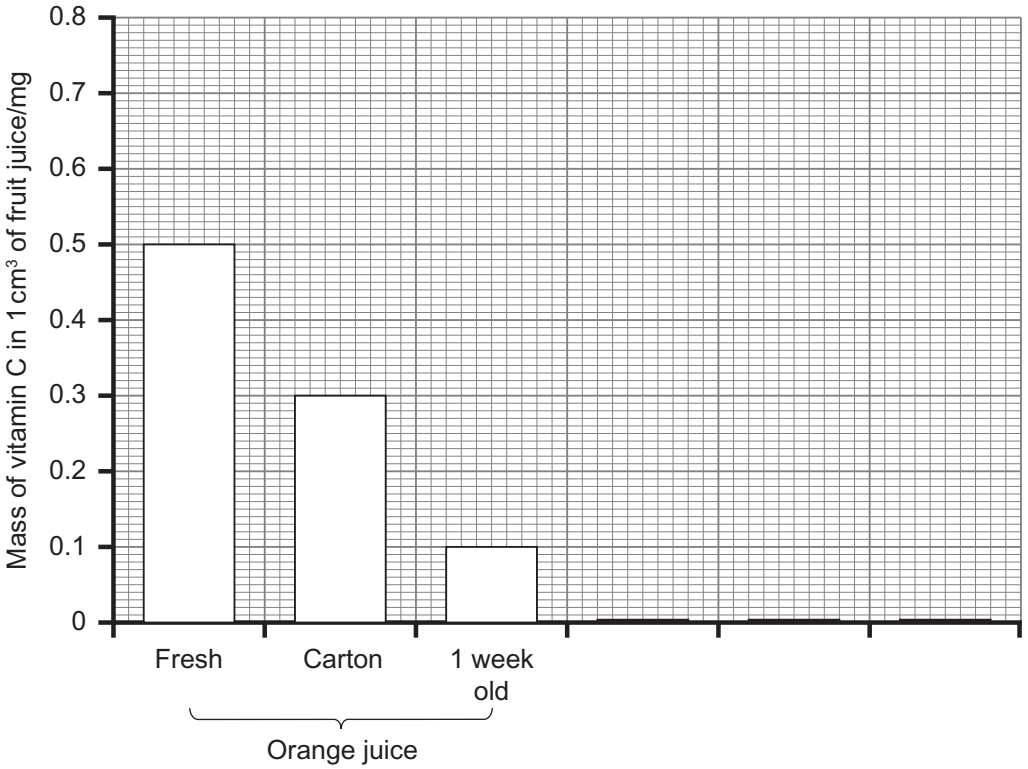
_____

_____ [2]

Examiner Only

Marks	Remark

The graph shows the average mass of vitamin C in 1 cm^3 of different fruit juices.



(iii) **Complete the graph** using the information in the table. [3]

(iv) Describe the trend shown by the results for fresh juices compared to carton juices.

_____

_____

_____ [1]

(v) Use evidence from the graph to explain why you are advised to use juice within 1 week.

_____

_____

_____ [1]

Examiner Only

Marks	Remark

An adult is recommended to have a daily intake of 60 mg of vitamin C.

(vi) Calculate the volume of carton orange juice which would provide an adult with their daily recommended intake of vitamin C.
Show your working.

Volume _____ [2]

(vii) Does this investigation provide sufficient evidence to support the conclusion that fresh blackcurrant juice contains more vitamin C than fresh orange juice?

Explain your answer.

_____

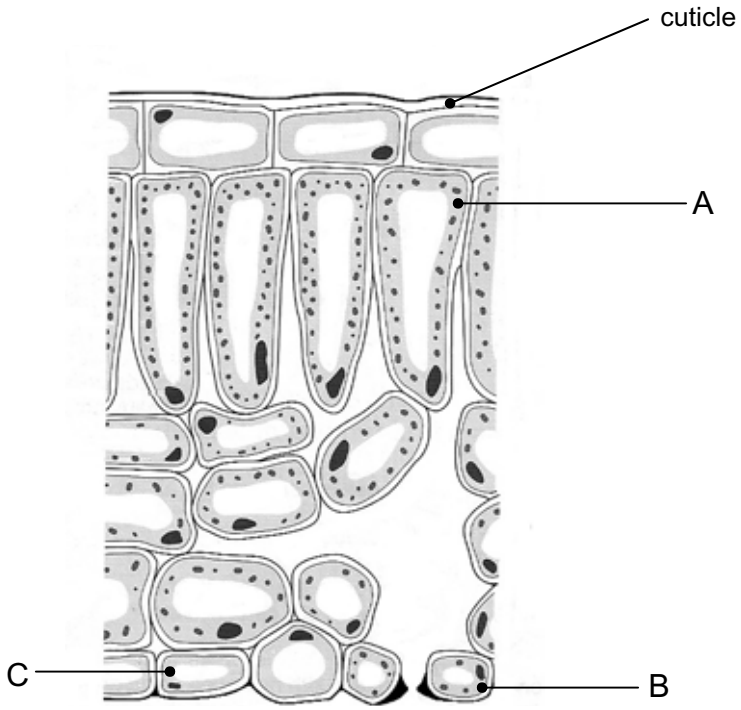
_____

_____ [1]

Examiner Only	
Marks	Remark

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9 The diagram shows part of a leaf.



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(a) Name cells A, B and C.

A _____ [1]

B _____ [1]

C _____ [1]

(b) Explain how the cuticle is adapted to allow light to reach the mesophyll cells.

_____

_____ [1]

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Marks	Remark

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Examiner Only	
Marks	Remark

10 The nervous and hormonal systems carry information from one part of the body to another.

(a) Describe how the nervous and hormonal systems differ in the type of signal they use.

Nervous _____ [1]

Hormonal _____ [1]

(b) The table shows the relationship between the diameter of a neurone and the speed of conduction.

Organism	Neurone diameter/μm	Speed of conduction/m s^{-1}
Cat	1	3
Crab	30	5
Worm	50	30
Squid	500	35

(i) Describe the relationship between the diameter of a neurone and the speed of conduction.

_____

_____ [1]

(ii) Suggest why the large diameter of the squid's neurones helps it to escape predation by whales.

_____

_____ [1]

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(Questions continue overleaf)

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Examiner Only	
Marks	Remark

11 When investigating the energy requirements of boys and girls with a normal activity level, a scientist found the following table in a research document.

Age/years	Energy requirement/kJ per day	
	Boys	Girls
1–3	5 150	4 878
4–6	7 180	6 469
7–10	8 248	7 285
11–14	9 295	7 725
15–18	11 535	8 834

(a) What conclusions can be reached from these results?

_____

_____

_____

_____

_____ [2]

(b) A thirteen year old boy with normal activity levels has a daily energy intake of 9 500 kJ.

Describe **two** ways the boy's adult health may be affected by this daily energy intake.

_____

_____

_____ [2]

(c) Explain why the energy requirements change when a woman becomes pregnant.

_____

_____ [1]

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Human health can be affected by the quantity of food eaten, healthy food choices and infections by microorganisms.

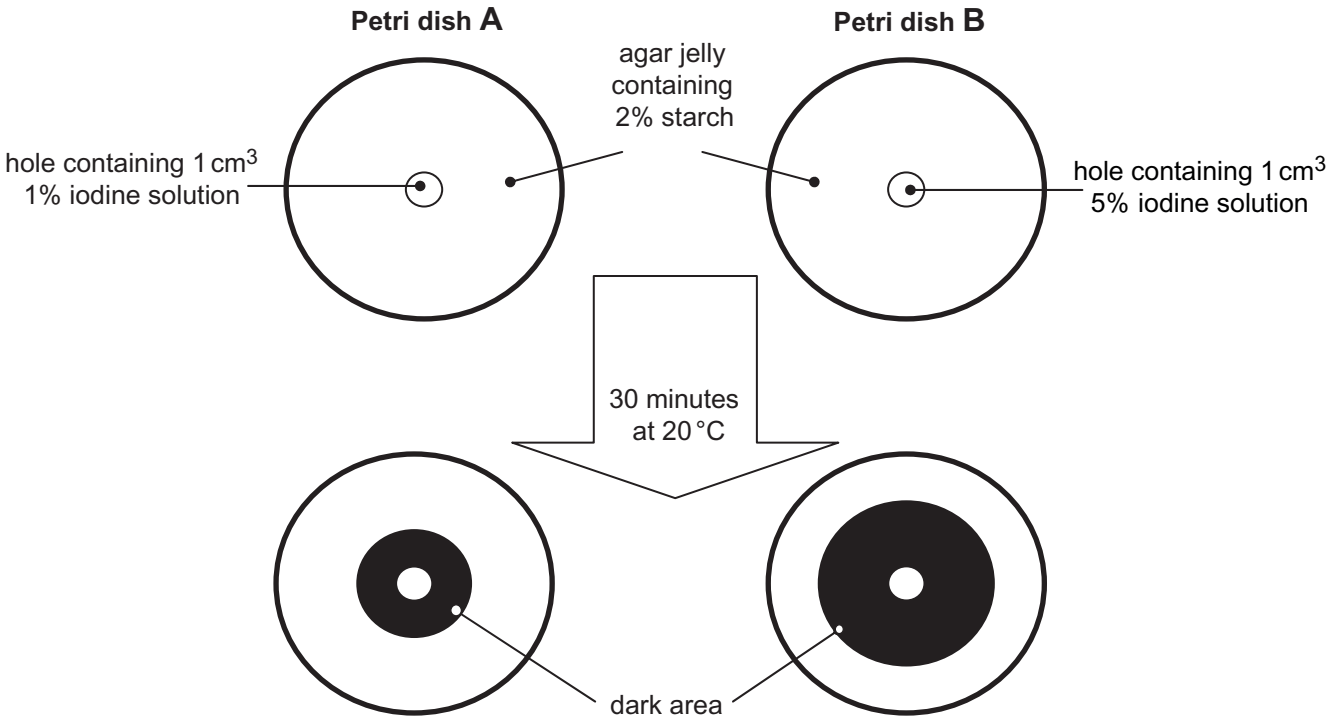
(d) Give **one other** factor which affects human health.

_____ [1]

Examiner Only	
Marks	Remark

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12 The diagram shows an experiment to investigate the effect of increasing the concentration of iodine solution on the rate at which iodine diffuses through agar jelly.



Describe and explain the conclusions that can be made from the results of this experiment.

In this question, you will be assessed on your written communication skills, including the use of specialist scientific terms.

[6]

Examiner Only	
Marks	Remark

THIS IS THE END OF THE QUESTION PAPER

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112136

New Specification

Rewarding Learning

General Certificate of Secondary Education
2012

Biology

Unit 1
Foundation

[GBY11]

WEDNESDAY 30 MAY, AFTERNOON

MARK SCHEME

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				AVAILABLE MARKS
1	**(a)**	A – Eyepiece (lens); B – Stage;	[1] [1]	
	(b)	See more cells/wider field of view/no damage to slide;	[1]	
	(c)	Adjust light;	[1]	4
2	**(a)**	A – Liver;	[1]	
	(b)	Protease (enzyme); **Accept:** pepsin (Hydrochloric) acid;	[1] [1]	
	(c)	Large surface area/long;	[1]	4
3	**(a)**	E; A; B;	[1] [1] [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]	5

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;

Response	Marks
Candidates must use appropriate specialist terms throughout to describe the mechanism of breathing using **at least 4** 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 the mechanism of breathing using **at least 3** 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 the mechanism of breathing using **at least 1** of the above points. The spelling, punctuation and grammar, form and style are of a **limited** standard.	[1]–[2]
Response not worthy of credit**.**	[0]

[6] 6

AVAILABLE MARKS

5 **(a)**

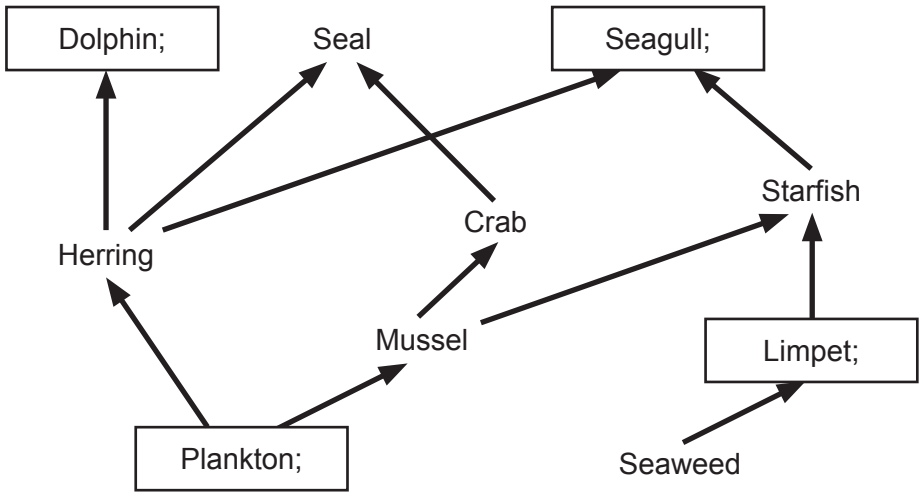
Reagent;		Colour after (food) tests;
		Blue-black;
	Blue;	
		Purple;
Ethanol;		

[6]

(b) **(i)** A **and** C; [1]

(ii) B; [1] 8

6 **(a)**



[4]

(b) Capture sunlight energy/photosynthesis; [1]
Make it available to others in the food chain; [1]

(c) Fewer crabs; [1]
Seals have less food; [1] 8

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					AVAILABLE MARKS
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

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 **at least 5** 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 measuring vitamin C content using **at least 3** 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 measuring vitamin C content using **at least 1** of the above points. The spelling, punctuation and grammar, form and style are of a **limited** standard.	[1]–[2]
Response not worthy of credit.	[0]

[6]

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				AVAILABLE MARKS
	(b)	**(i)** 0.4;	[1]	
		(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; **Must** use appropriate evidence from graph.	[1]	
		(vi) Carton orange contains 0.3 mg vitamin C per ml; 60 ÷ 0.3 = 200 cm^3 **Accept:** correct calculation.	[1] [1]	
		(vii) Any **one** from: • Yes – blackcurrant average is higher; • No – ranges overlap; **Reject:** yes/no unexplained.	[1]	17
9	**(a)**	A – Palisade (mesophyll cell); B – Guard (cell); C – Lower epidermis (cell);	[1] [1] [1]	
	(b)	Thin/clear/transparent/colourless	[1]	4
10	**(a)**	Nervous – electrical (impulses); Hormonal – chemical (messages);	[1] [1]	
	(b)	**(i)** The larger the diameter of the nerve, the higher/faster the speed (of conduction);	[1]	
		(ii) Faster response/reflex/reaction rate (/time); **Reject:** "faster conduction rate" unqualified	[1]	4
11	**(a)**	As age increases so does the amount of energy required; Boys require more energy than girls;	[1] [1]	
	(b)	Increased weight/BMI/obesity; Heart disease/heart attack/stroke/high blood pressure/diabetes/arthritis;	[1] [1]	
	(c)	More energy required for **growing** embryo;	[1]	
	(d)	Genetic/inherited factors/alcohol/smoking/drugs;	[1]	6

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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 **at least 5** 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 **at least 3** 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 **at least 1** of the above points. The spelling, punctuation and grammar, form and style are of a **limited** standard.	[1]–[2]
Response not worthy of credit**.**	[0]

[6] 6

Total **80**

AVAILABLE MARKS

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