CCEA GCSE SCIENCE: SINGLE AWARD (MODULAR)

SCIENCE



EXAM QUESTION PACK

MODULE 1 FOUNDATION TIER GSC11 PAPERS

STEMUP

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Rewarding Learning

Centre Number

71	

Candidate Number

General Certificate of Secondary Education
2012

Science: Single Award (Modular)

Staying Alive
Module 1
Foundation Tier

[GSC11]

GSC11

MONDAY 12 NOVEMBER 2012, AFTERNOON

TIME

45 minutes.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
Write your answers in the spaces provided in this question paper.
Answer **all seven** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 45.
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
Total Marks	

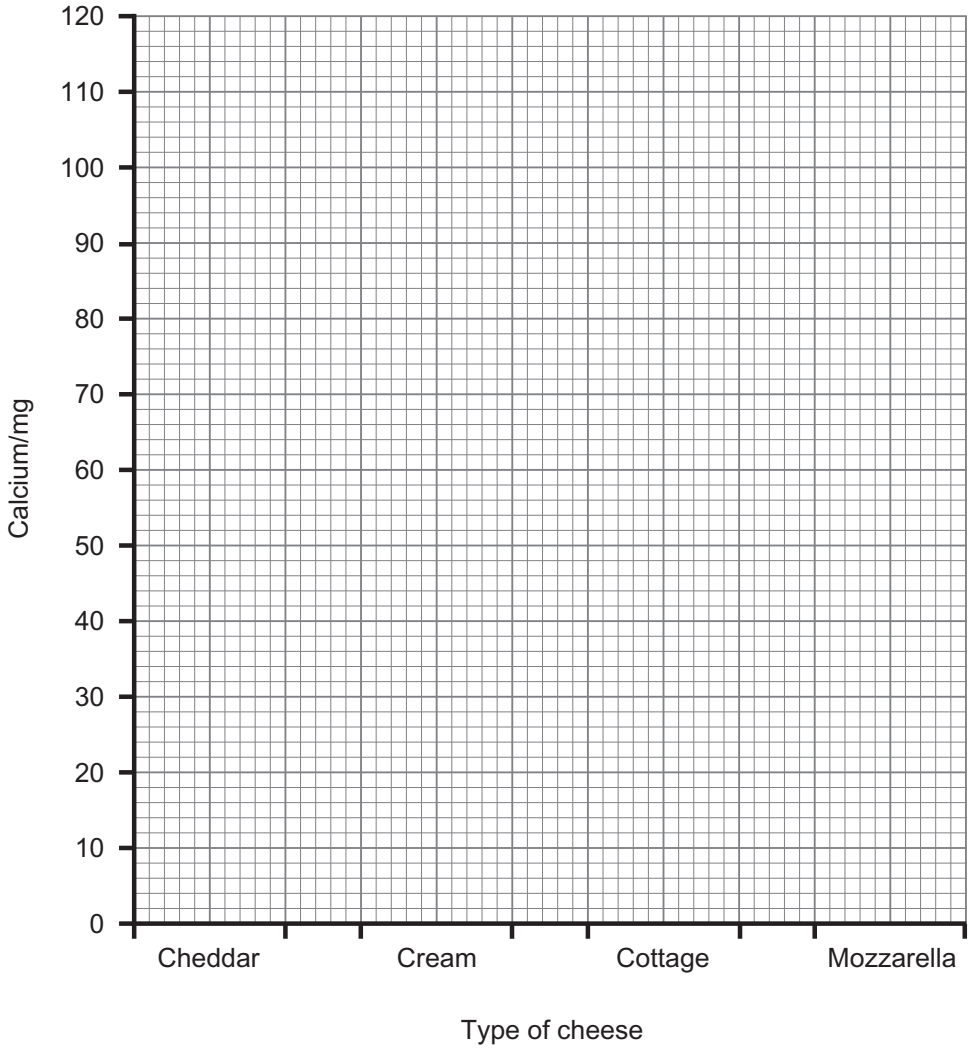
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Examiner Only	
Marks	Remark

1 **(a)** The table below shows the iron and calcium content of different types of cheese.

Type of cheese	Iron /mg	Calcium /mg
Cheddar	0.1	100
Cream	1.6	20
Cottage	3.9	70
Mozzarella	2	110

(i) Draw a bar chart showing the **calcium** content of these cheeses on the grid below.



[2]

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(ii) Calculate the difference in **calcium** content of cream cheese and cottage cheese.

(Show your working out.)

_____ mg [2]

(iii) Anaemia is a disease which reduces the number of red blood cells. Which cheese would be best for someone who suffers from anaemia? Give a reason for your choice.

Cheese _____

Reason _____ [2]

(b) Apart from minerals, such as iron and calcium, name and state the function of another **food type** which all cheese contains.

Name _____

Function _____ [2]

Examiner Only	
Marks	Remark

Examiner Only	
Marks	Remark

2 **(a)** The statements below show changes that can reduce the risk of having a heart attack.

Circle the statements that are lifestyle changes.

reduce salt intake

reduce time spent watching television

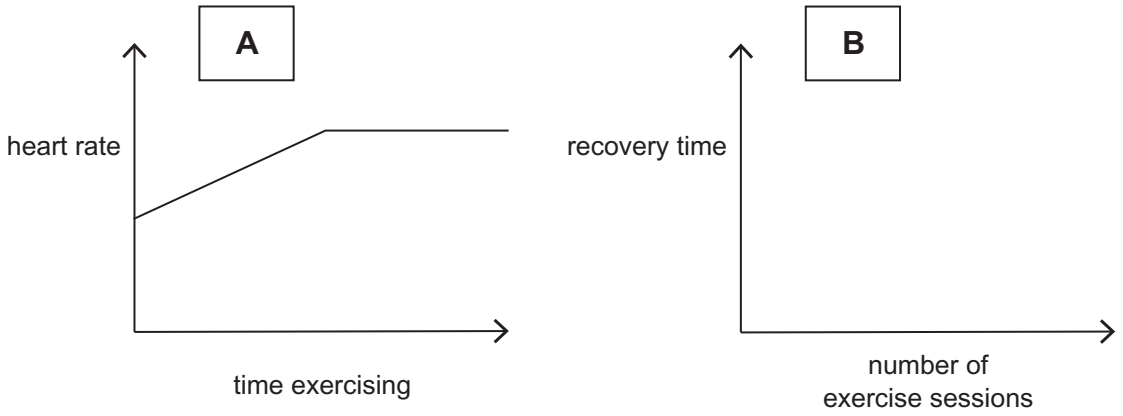
reduce stress

reduce cholesterol levels

stop smoking

reduce intake of fats [3]

(b) Graph **A** below shows how exercise affects heart rate. Sketch a graph on the axes **B** below to show how the number of exercise sessions affects the **recovery time** of the heart.



[2]

(c) Complete the sentence below.

Choose from:

wholewheat : protein : fibre : breakfast

People with constipation are told to increase their intake

of _____ cereals because they contain a lot

of _____. [2]

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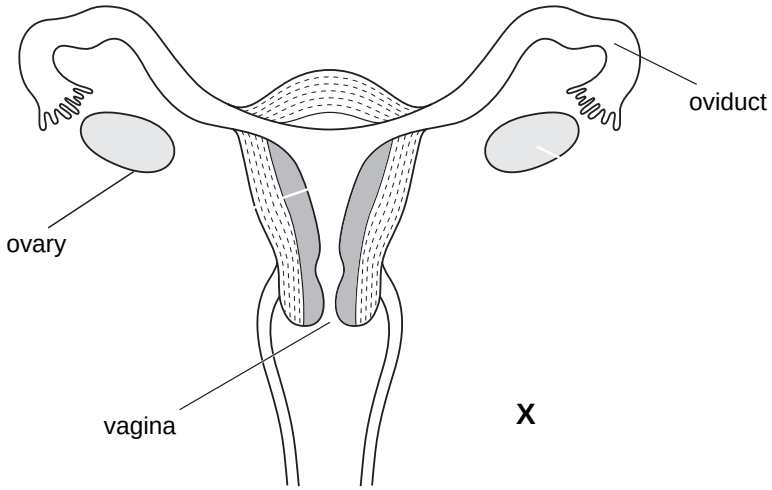
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(Questions continue overleaf)

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Examiner Only	
Marks	Remark

3 **(a)** The diagram shows the female reproductive system.



© *Focus Educational Software*

(i) Draw a line from **X** to the part that receives sperm first. [1]

(ii) The statements below describe what happens to the ovum (egg) from release to implantation but they are in the wrong order.

A enters the oviduct
B embeds in uterus
C enters uterus
D released from ovary
E is fertilised

Using the letters **A**, **B**, **C**, **D** and **E** place the statements in the correct order below.

The first has been done for you.

D _____ _____ _____ _____ _____ [2]

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(b) Males can have an operation which cuts parts of their reproductive system thus preventing the release of sperm.

(i) Name this type of operation.

Choose from:

contraception : cloning : vasectomy

_____ [1]

(ii) Name the part of the reproductive system that is cut during this operation.

_____ [1]

(c) Give **one** reason why some people are against the use of contraceptives.

_____ [1]

Examiner Only	
Marks	Remark

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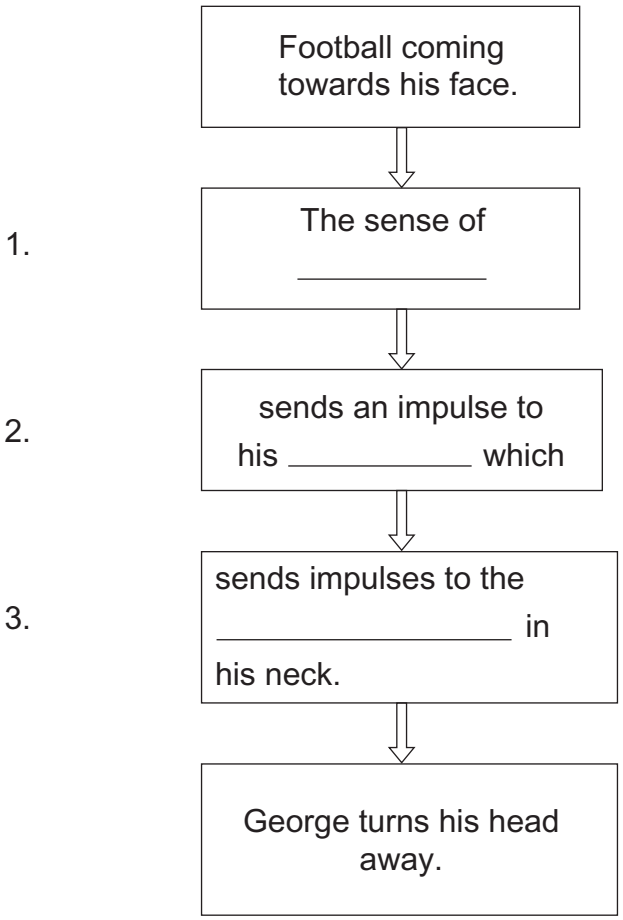
Examiner Only	
Marks	Remark

4 **(a)** The nose is an example of a sense organ. Name **two** other sense organs.

1. _____

2. _____ [2]

(b) George sees a football coming towards his face and wants to avoid it hitting him. Complete the flowchart below at boxes 1, 2 and 3 to show how a voluntary response turns his head away.



[3]

(c) Complete the following sentence.

The central nervous system is made up of the _____

and the _____. [2]

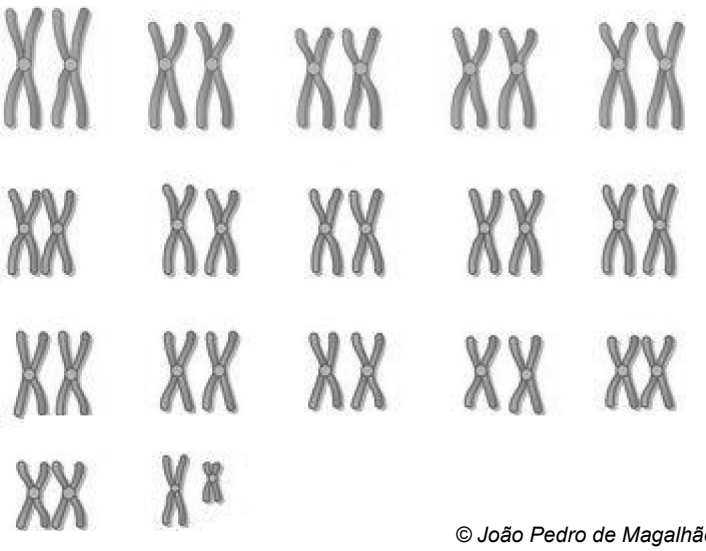
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(Questions continue overleaf)

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Examiner Only	
Marks	Remark

5 **(a)** The diagram shows all the chromosomes in the nucleus of a cell.



© João Pedro de Magalhães
http://jp.senescence.info/thoughts/karyotype.gif

(i) How many chromosomes are in this cell?

_____ [1]

(ii) Explain why this cell cannot be:

human.

_____

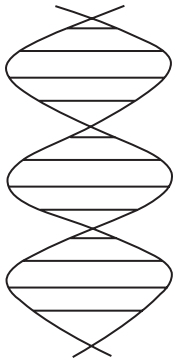
_____

a sex cell.

_____

_____ [2]

(b) Chromosomes are made up of a **chemical** molecule. The diagram shows its double helix shape.



(i) What is the name of this **chemical**?

_____ [1]

(ii) Give a variation between humans which would be decided by chromosomes.

Choose from:

dyed blonde hair : scar on face : eye colour

_____ [1]

Examiner Only	
Marks	Remark

Examiner Only	
Marks	Remark

6 Shown below is an advert for a chocolate bar.

Have a bar of choccy bear after school - yummy!!



© *iStockphoto / Thinkstock*

(a) Suggest what type of person this advert is aimed at.

_____ [1]

(b) Suggest **three** reasons why there were many complaints about this advert on health grounds.

1. _____

2. _____

3. _____ [3]

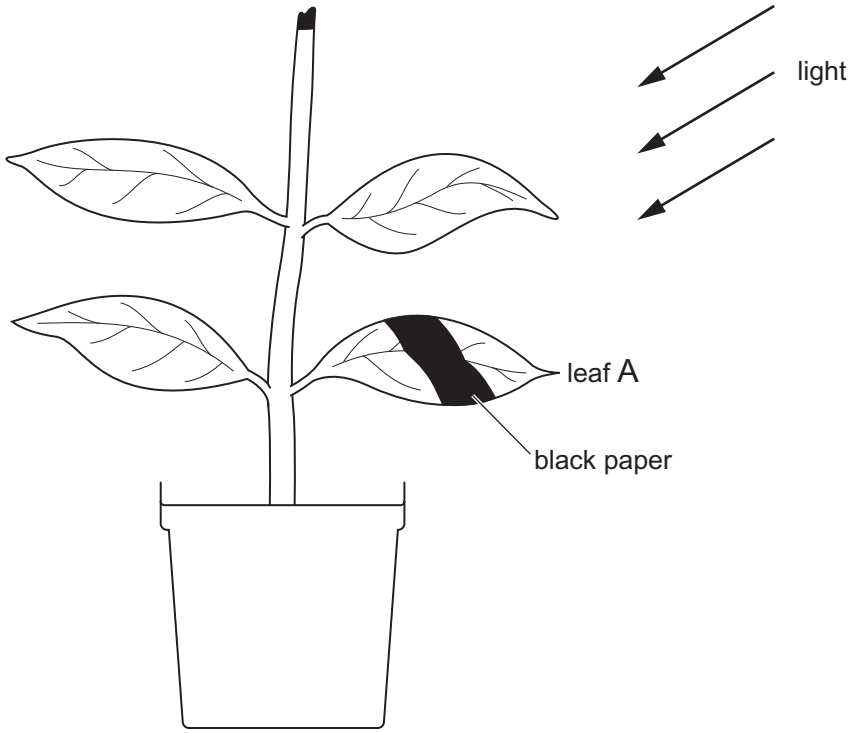
(c) Guidelines state that only a small amount of chocolate should be eaten but many people ignore this. Suggest a reason why.

_____

_____ [1]

Examiner Only	
Marks	Remark

7 The plant below can be used to investigate if light is needed for photosynthesis. It is left in light conditions for eight hours.



(a) Leaf A is then tested for starch using Iodine. Describe and explain the result you would expect for the covered and uncovered parts of the leaf.

_____

_____

_____

_____ [3]

(b) Describe any **three** steps that have to be done when testing a leaf for starch. Explain the reason for each of these steps.

_____

_____

_____

_____ [3]

(c) State why photosynthesis is vital for humans.

_____ [1]

THIS IS THE END OF THE QUESTION PAPER

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Rewarding Learning

General Certificate of Secondary Education
2012

Science: Single Award (Modular)

Staying Alive
Module 1
Foundation Tier

[GSC11]

MONDAY 12 NOVEMBER 2012
1.30 pm–2.15 pm

MARK SCHEME

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					AVAILABLE MARKS
1	**(a)**	**(i)**	$\frac{1}{2}$ mark per correct bar round down	[2]	
		(i)	70 – 20 50 mg	[2]	
		(iii)	cottage/most iron: needed for red blood cells	[2]	
	(b)		Protein/fat: Growth/energy	[2]	8
2	**(a)**		reduce time spent watching television: reduce stress: stop smoking	[3]	
	(b)		descending curve: finishes above 0	[2]	
	(c)		wholewheat : fibre	[2]	7
3	**(a)**	**(i)**	line to vagina	[1]	
		(ii)	A E C B AEC or ECB – 1 AE or EC or CB – 1 Ignore position	[2]	
	(b)	**(i)**	vasectomy	[1]	
		(ii)	sperm duct	[1]	
	(c)		religion/moral/stopping life	[1]	6
4	**(a)**		eye : ear : skin : tongue : nose Any two	[2]	
	(b)		sight : brain : muscle Correct order only	[3]	
	(c)		brain : spinal cord	[2]	7
5	**(a)**	**(i)**	34	[1]	
		(ii)	humans have 46 paired chromosomes/ should have single/23	[2]	
	(b)	**(i)**	DNA	[1]	
		(ii)	eye colour	[1]	5

				AVAILABLE MARKS
6	**(a)**	Children	[1]	
	(b)	encourage to consume <u>more</u> fat/sugar [1]: named health problems: dental decay/diabetes/heart disease/any valid [2]	[3]	
	(c)	like them/won't happen to me/any valid	[1]	5
7	**(a)**	(Part covered: yellow/brown) [1] no light [1] + converse [1] (uncovered part: black/blue) [1] light [1] + converse [1]	[3]	
	(b)	boiling water – to kill cells/allow stain into cell: boil in ethanol – remove chlorophyll: rinse in hot water – to soften: spread on white tile – to see colour: add drops of iodine – to see if starch present	Any [3]	
	(c)	produces food/produces oxygen	[1]	7
			Total	**45**

Rewarding Learning

General Certificate of Secondary Education
2011–2012

Science: Single Award (Modular)

Staying Alive
Module 1
Foundation Tier

[GSC11]

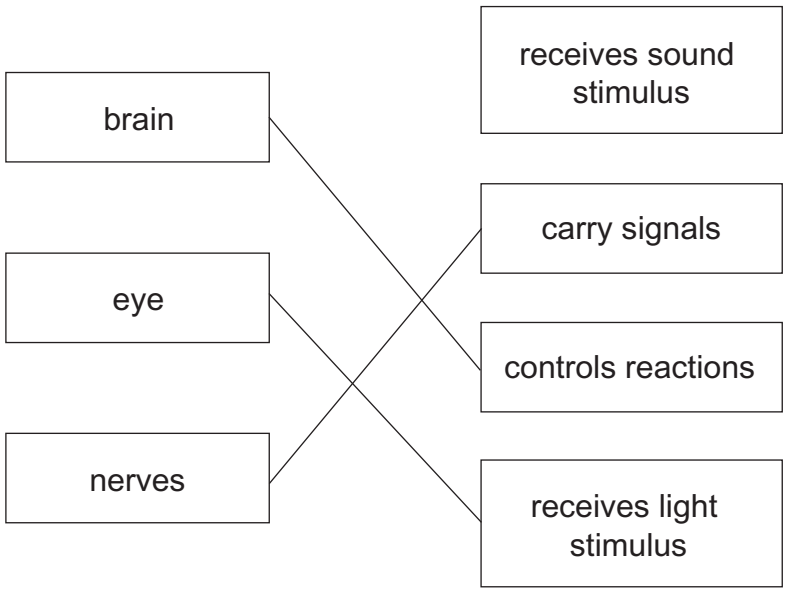
TUESDAY 15 MAY 2012
9.15 am–10.00 am

MARK SCHEME

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		AVAILABLE MARKS
1	**(a)** transports nutrients to foetus, amnion, placenta [3]	
	(b) **(i)** to have termination or not [1]	
	(ii) any suitable – medical, religious, family, moral [1]	
	(c) cervix [1]	
	(d) uterus, placenta [2]	8

2 **(a)**



[3]

(b)

ACTION	VOLUNTARY	REFLEX
reading this question	✓	
knee jerk		✓
running	✓	
kissing	✓	

[2]

(c) **(i)** skin [1]

(ii) muscles/**appropriate** named muscle e.g. leg muscle, arm muscle [1] — 7

					AVAILABLE MARKS
3	**(a)**	**(i)**	ADBC 2 marks AD/DB/BC anywhere 1 mark	[2]	
		(ii)	forceps	[1]	
		(iii)	all except part A shaded	[1]	
		(iv)	yellow-brown	[1]	
	(b)	**(i)**	oxygen	[1]	
		(ii)	cells/organisms, energy animals and plants	[2]	8
4	**(a)**	**(i)**	ears; spots/coat/colour; noses *Any 2*	[2]	
		(ii)	asexual, identical	[2]	
		(iii)	faster, know characteristics/better quality/cheaper/more yield	[1]	
	(b)	**(i)**	complementary helix, (inside box) and complete	[2]	
		(ii)	nucleus/genes/chromosomes	[1]	8
5	**(a)**		all plots correct 2 4/5 correct – 1 mark smooth curve 1 – must not be through origin	[3]	
	(b)	**(i)**	more active energy needs increase	[1]	
		(ii)	8–30: older they get needs increase, 30–60: older adults get needs decrease	[2]	
	(c)		gender/pregnancy	[1]	7
6	**(a)**		eating too much constantly, intake exceeds energy needs/eating more than need/excess stored as fat	[3]	
	(b)	**(i)**	no one under age of 30/all older/no one born with	[1]	
		(ii)	6 + 14 + 18 + 50 + 68 + 46 202 If one reading from graph incorrect −1 mark	[2]	
		(iii)	only 1 GP/location/only type 2 shown/low numbers	[1]	7
				Total	**45**

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Rewarding Learning

Centre Number	
71	

Candidate Number

General Certificate of Secondary Education
2011–2012

Science: Single Award (Modular)

Staying Alive
Module 1
Foundation Tier

[GSC11]

GSC11

MONDAY 27 FEBRUARY 2012
9.30 am–10.15 am

TIME

45 minutes.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
Write your answers in the spaces provided in this question paper.
Answer **all seven** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 45.
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
Total Marks	

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Examiner Only	
Marks	Remark

1 (a) (i) Below are two vitamins and some foods.

Use lines to link each vitamin with **one** food that has a lot of that vitamin.

VITAMIN	FOOD
Vitamin D	oily fish
	noodles
Vitamin C	
	lemons

[2]

(ii) Complete the following sentence.

Choose from:

water **sunlight** **heat**

We also get vitamin D from the action of _____ on our skin. [1]

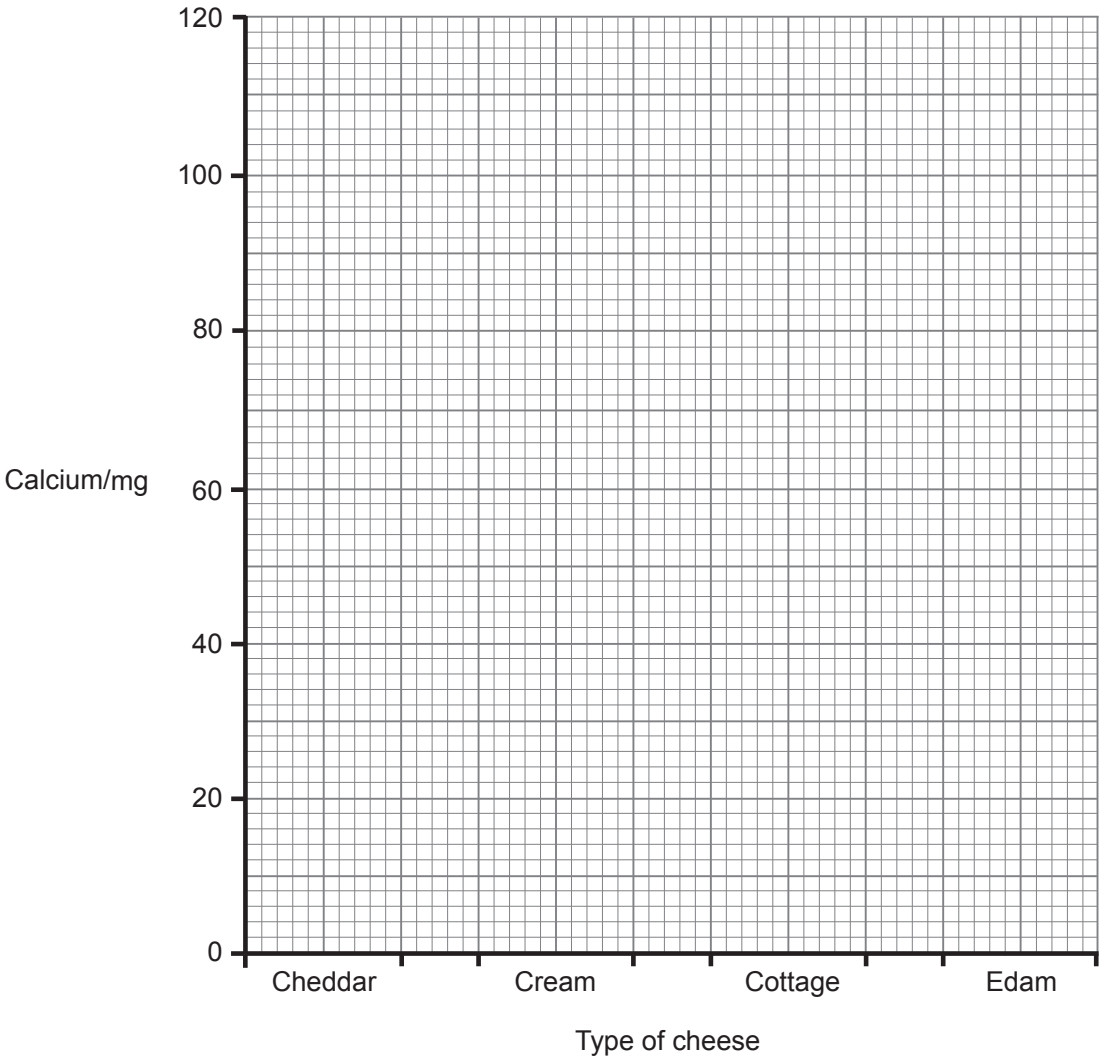
(b) The table below shows the mineral content of different types of cheese.

Type of cheese	Calcium/mg	Iron/mg
Cheddar	110	0.1
Cream	50	1.5
Cottage	70	3.9
Edam	110	2.0

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Examiner Only	
Marks	Remark

(i) Draw a bar chart showing the **calcium** content of these cheeses on the grid below. [2]



(ii) Name the type of cheese that has the **least** amount of calcium.

_____ [1]

(c) Anaemia is a disease which affects red blood cells.

Name a cheese from the table opposite which would be best for someone who suffers from anaemia.

Give a reason for your choice.

Cheese _____ [1]

Reason _____

_____ [1]

Examiner Only	
Marks	Remark

2 **(a)** Three pupils were each given a different plant and asked to test five of its leaves for starch.

Their results are shown below.

Pupil	Leaf number				
	1	2	3	4	5
Sean	✓	✘	✓	✘	✓
George	✘	✘	✓	✘	✘
Stacey	✓	✓	✓	✓	✓

Key
✓ – starch present
✘ – starch absent

Name the pupil whose plant had most light.

Give a reason for your answer.

Name of pupil _____ [1]

Reason _____ [1]

(b) Complete the sentences below.

Choose from:

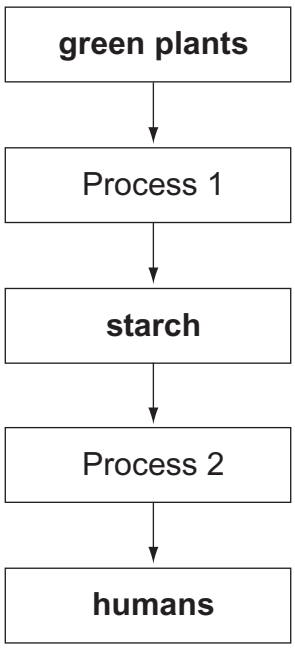
light **alcohol** **bottom** **top** **chlorophyll**

Leaves are green due to the presence of _____ .

This is needed to trap _____ and is mostly

found at the _____ of the leaf. [3]

(c) The diagram below shows the links between green plants and humans.



Name the processes 1 and 2.

Choose from:

breathing **photosynthesis** **feeding** **reproducing**

Process 1 _____

Process 2 _____ [2]

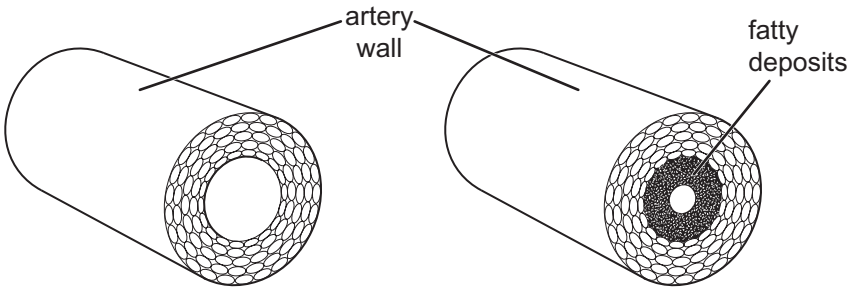
Examiner Only

Marks	Remark

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Examiner Only	
Marks	Remark

3 **(a)** The diagrams below show heart arteries. These provide the heart with food and oxygen.



normal artery **blocked artery**

(i) Name the process which uses food and oxygen to give heart cells energy.

Choose from:

reproduction **respiration** **digestion**

_____ [1]

(ii) Complete the word equation for the process named above.

Food + oxygen ⟶ carbon dioxide + _____ + energy [1]

(iii) Use the diagram to suggest how people with blocked arteries could have a heart attack.

_____

_____ [2]

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(b) (i) The table below shows changes that can reduce the risk of heart disease.

Complete the table by placing a tick (✓) to show if the change is to diet or lifestyle.

Changes	Diet	Lifestyle
exercise regularly		
less stress		
less salt		
less saturated fat		

[2]

(ii) Suggest **one** way that the government could encourage people to take more exercise.

_____ [1]

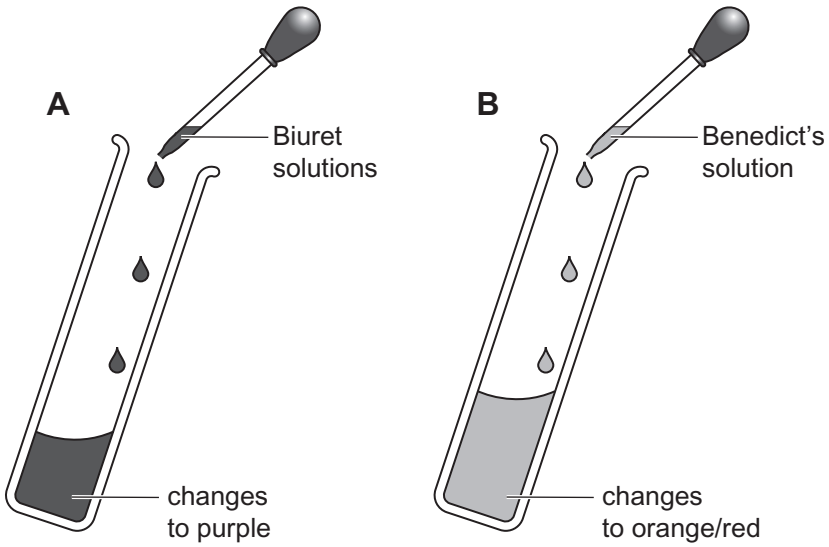
Examiner Only

Marks	Remark

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Examiner Only	
Marks	Remark

4 **(a)** The diagrams **A** and **B** show food tests being carried out.



(i) Name the food type being tested in each diagram.

A _____

B _____ [2]

(ii) Suggest why it is important to know which food types we are eating.

_____

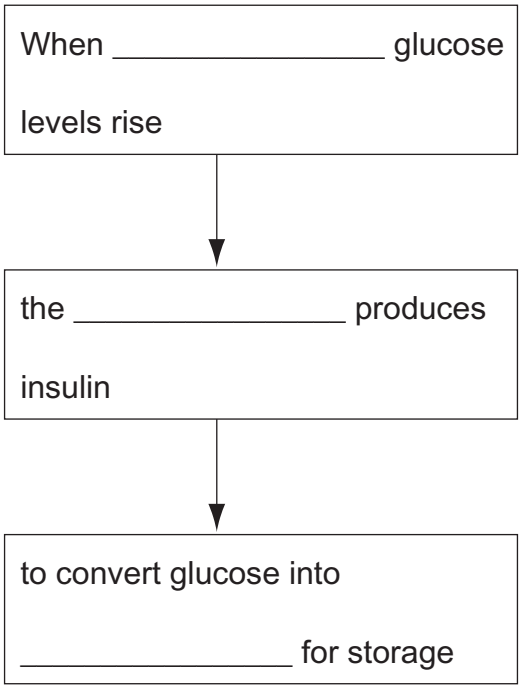
_____ [1]

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(b) (i) Complete the flow chart below to explain the function of insulin in the body.

Choose from:

liver **glycogen** **blood** **pancreas** **cell** **fat**



[3]

(ii) Name the disease caused if insulin can no longer function.

_____ [1]

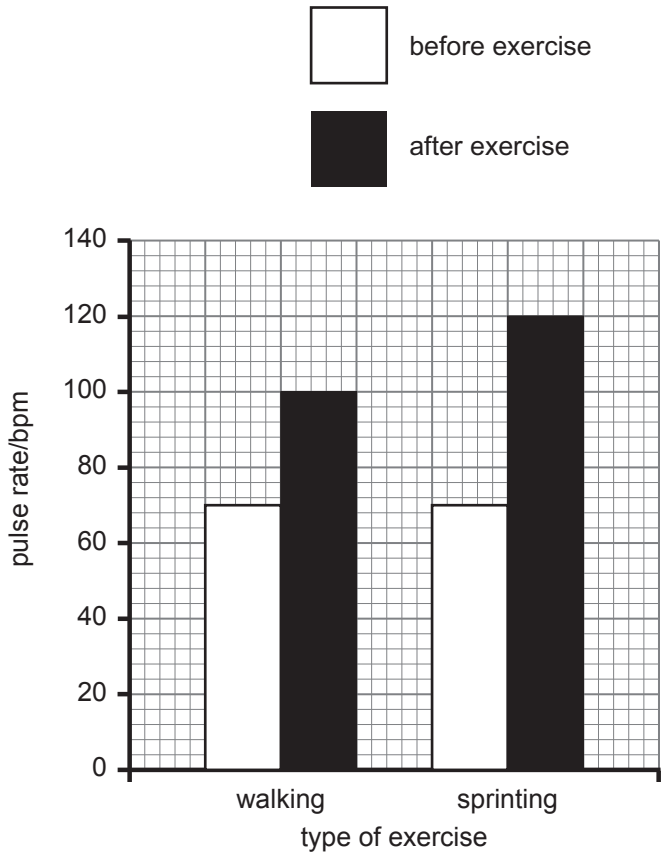
Examiner Only

Marks	Remark

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Examiner Only	
Marks	Remark

5 The bar chart shows the effect of two types of exercise on Simon's pulse rate.



(a) Calculate the increase in pulse rate caused by walking.

Show your working out.

_____ bpm [2]

(b) Explain fully why sprinting causes a greater increase in pulse rate than walking.

_____

_____

_____ [2]

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6 The poster below was used in an advertising campaign for 'CCEA' coffee.



The makers of 'TASTY' coffee complained to the ASA (Advertising Standards Agency) saying that the poster was misleading because the survey was unreliable.

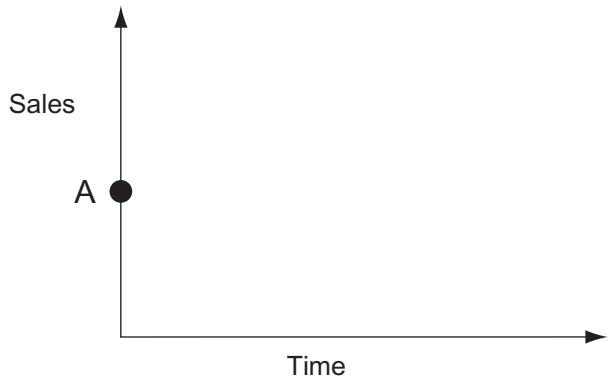
(a) State **three** pieces of information about the survey that would be needed to decide if it was unreliable.

_____

_____

_____ [3]

(b) The ASA ruled that the poster was not misleading. Starting at point A below sketch two lines to suggest what might happen to the sales of each coffee after this ruling was made public.
Label each line with the name of the coffee.



[2]

(c) A cup of coffee is mostly water. State **one** function of water in the diet.

_____ [1]

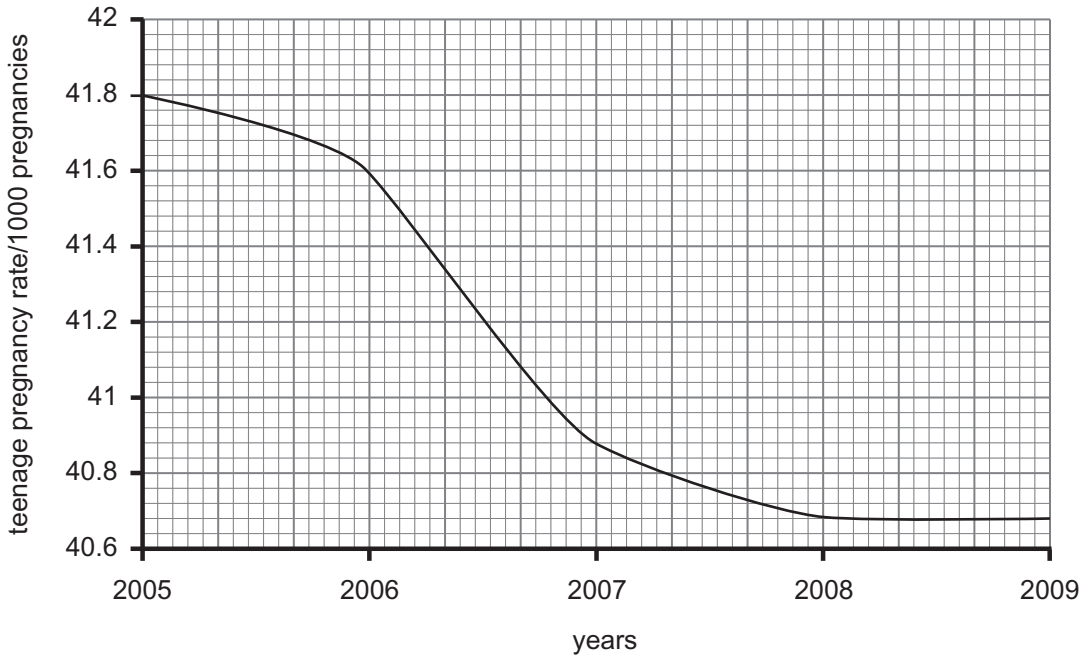
Examiner Only

Marks	Remark

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Examiner Only	
Marks	Remark

7 The graph below shows the rate of teenage pregnancies in a city from 2005 to 2009.



The government introduced measures in 2005 aimed at reducing the rate of teenage pregnancies.

(a) Using data from the graph describe the evidence which would suggest that these measures are:

1. working.

_____ [1]

2. not working as well as hoped.

_____

_____ [2]

(b) It has been suggested that there is a higher rate of teenage pregnancies in England than in Northern Ireland.
How could you prove that this suggestion is correct?

_____

_____

_____

_____ [3]

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Rewarding Learning

General Certificate of Secondary Education
2011–2012

Science: Single Award (Modular)

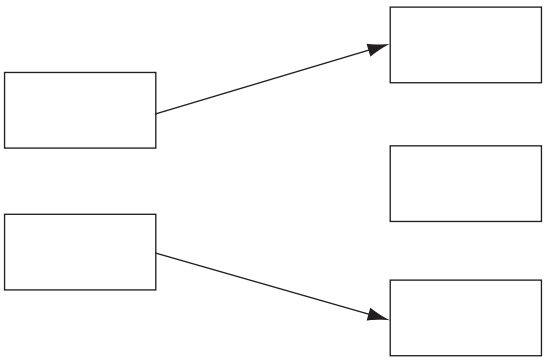
Staying Alive
Module 1
Foundation Tier

[GSC11]

MONDAY 27 FEBRUARY 2012
9.30 am–10.15 am

MARK SCHEME

STEMUP.CO.UK

				AVAILABLE MARKS
1	**(a)**	**(i)**	 [2]	
		(ii)	sunlight [1]	
	(b)	**(i)**	$\frac{1}{2}$ mark each bar round down [2]	
		(ii)	cream cheese [1]	
	(c)		cottage cheese, most iron/iron prevents anaemia [2]	8
2	**(a)**		Stacey, all leaves have starch [2]	
	(b)		chlorophyll, light, top [3]	
	(c)		1 – photosynthesis, 2 – feeding [2]	7
3	**(a)**	**(i)**	respiration [1]	
		(ii)	water [1]	
		(iii)	less blood flow, [1]/ease of blood flow less food/oxygen/energy [any 1] [2]	
	(b)	**(i)**		

Changes	Diet	Lifestyle
exercise regularly		✓
less stress		✓
less salt	✓	
less saturated fat	✓	

[2]

(ii) free facilities/more PE in school/any valid [1] 7

					AVAILABLE MARKS
4	**(a)**	**(i)**	A – protein, B – sugars	[2]	
		(ii)	avoid over eating, make healthy choices, has named disease e.g. diabetes	[1]	
	(b)	**(i)**	blood, pancreas, glycogen	[3]	
		(ii)	diabetes	[1]	7
5	**(a)**		1 wrong reading answer sequential $100 - 70 = 30$	[2]	
	(b)		more energy/respiration needed, more oxygen/food needed, oxygen debt.	[2]	4
6	**(a)**		number of people tested, any info to ensure representative of whole population e.g. ages, who conducted the tests	[3]	
	(b)		ascending line labelled CCEA, 1 label 2 marks steady/descending line labelled TASTY no labels 1 mark allow slight increase than decrease (or TASTY)	[2]	
	(c)		lubricant/solvent/transport	[1]	6
7	**(a)**		1. overall numbers reduced, [1] 2. reduction very small/no reduction last year [2]	[3]	
	(b)		compare figures; secondary sources – medical/internet; pro rata survey	[3]	6
				Total	**45**

Rewarding Learning

Centre Number

71	

Candidate Number

General Certificate of Secondary Education
2011–2012

Science: Single Award (Modular)

Staying Alive
Module 1

Foundation Tier

[GSC11]

TUESDAY 8 NOVEMBER 2011
1.30 pm–2.15 pm

GSC11

TIME

45 minutes.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
Write your answers in the spaces provided in this question paper.
Answer **all six** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 45.
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
Total Marks	

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Examiner Only	
Marks	Remark

1 **(a)** Below are parts of the male reproductive system and their functions. Use lines to link each part with its correct function.

PART	FUNCTION
penis	puts sperm into vagina
testes	adds fluid to sperm
scrotum	keeps sperm cool
	makes sperm

[3]

(b) The table below describes changes that happen in boys and girls at puberty.

Complete the table by placing a tick (✓) in the correct column.

Changes	Boys only	Girls only	Both
height increase			
sperm produced			
ovulation			
pubic hair grows			
voice deepens			
hips widen			

[3]

(c) Complete the sentence below.

Choose from:

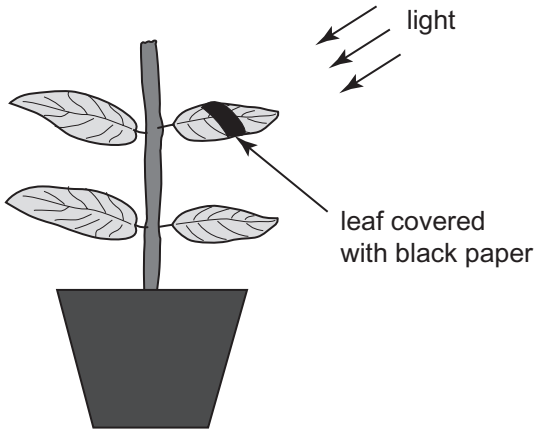
males **mineral** **hormone** **females** **vitamin**

Testosterone is a _____ which triggers physical changes in _____ at puberty. [2]

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Examiner Only	
Marks	Remark

2 **(a)** Some pupils set up the investigation shown below to show that light is needed for a leaf to make starch.



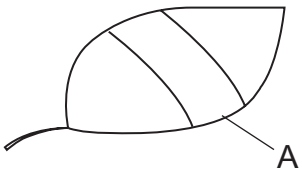
(i) Their method is given below but the steps are in the wrong order.

A Test the leaf for starch
B Fix strips of black paper on both sides of a leaf
C Put the plant in bright light for 24 hours
D Put in a dark cupboard to destarch the plant

Using the letters **A**, **B**, **C** and **D** put the steps in the correct order.

_____ _____ _____ _____ [2]

Shown below is a leaf from the investigation. Part A shows where the black paper was placed.



(ii) On the diagram above shade the part which has no starch. [1]

(iii) Name the chemical used to test for starch.

Choose from:

water **Benedicts** **iodine**

_____ [1]

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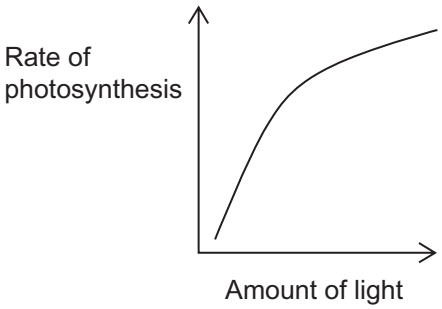
Examiner Only	
Marks	Remark

(b) (i) Complete the word equation for photosynthesis.

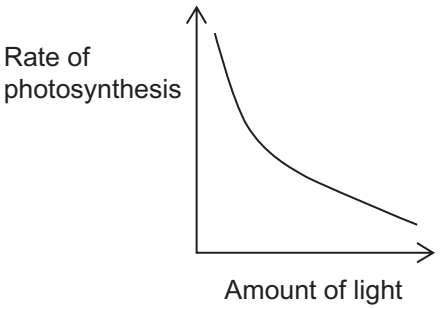
carbon dioxide + water ⟶ sugar + _____ [1]

One of the graphs below shows how the amount of light affects the rate of photosynthesis.

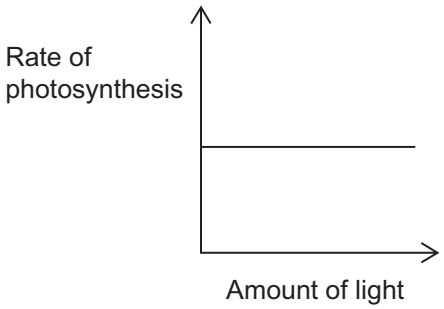
A



B



C



(ii) Which graph (**A**, **B** or **C**) is correct? Explain your answer.

Graph _____

Explanation _____ [2]

(iii) Suggest **one** way that a tomato grower could increase the amount of light getting to his plants.

_____ [1]

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Examiner Only	
Marks	Remark

3 **(a)** The table below shows the daily amount of energy needed by teenage and adult females.

Group	Energy/kCal
adult	2400
teenager	2800

(i) Calculate how much more energy the teenager needs compared to the adult.

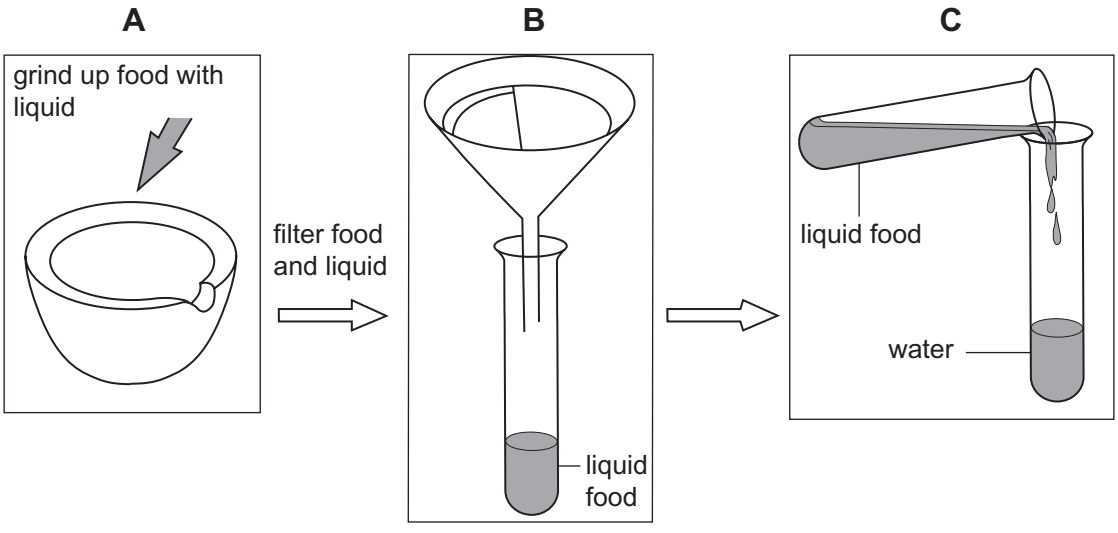
_____ kCal [1]

(ii) Suggest two reasons why the teenager needs more energy than the adult.

1. _____

2. _____ [2]

(b) The diagram below shows three steps (**A**, **B** and **C**) to be done when testing foods for fats.



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(i) Name the liquid that is added to the food in step **A**.

Choose from:

iodine **alcohol** **milk**

_____ [1]

(ii) What will be trapped in the filter paper at step **B**?

Choose from:

food solution : **liquid food** : **solid food**

_____ [1]

(iii) If the liquid food contains fat what will be seen in the water at step **C**?

_____ [1]

(c) **(i)** Suggest a reason why this food test could not be used to find out if smoky bacon crisps have a different amount of fat than salt and vinegar crisps.

_____ [1]

(ii) Suggest a reason why it is important to know how much fat is in food.

_____ [1]

Examiner Only

Marks	Remark

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Examiner Only	
Marks	Remark

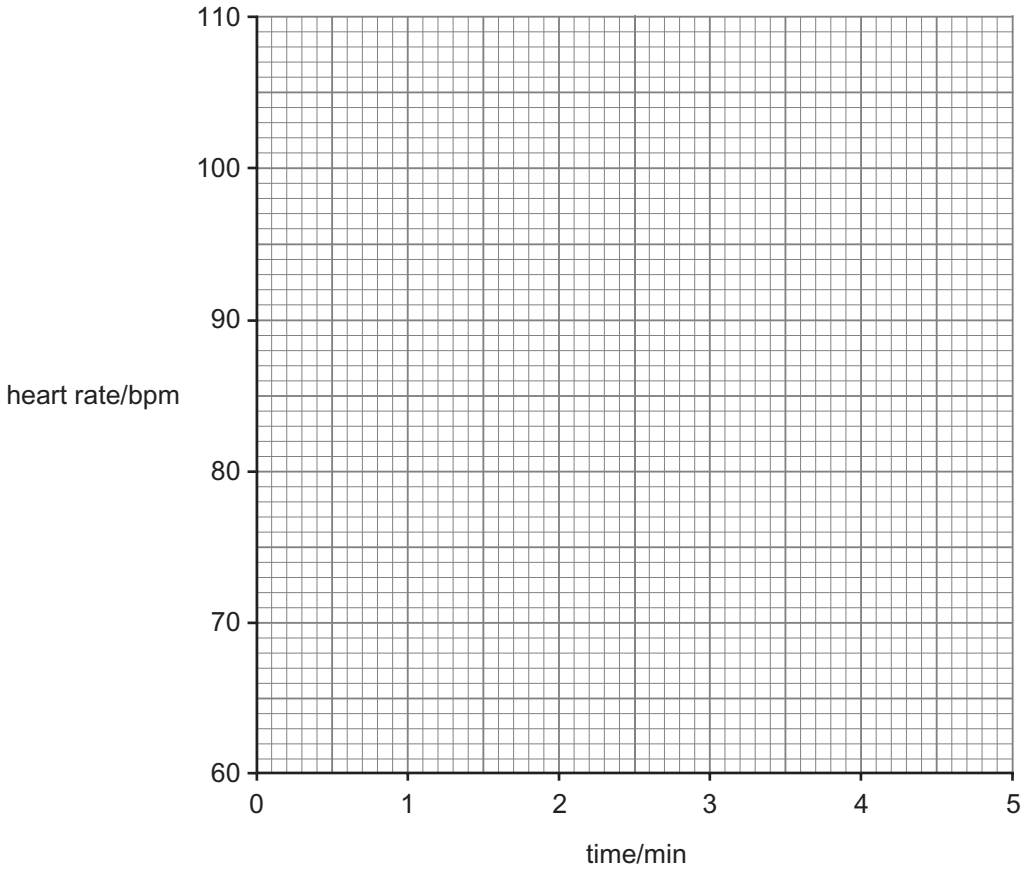
4 **(a)** The table below shows the effect of exercise on heart rate. These results are for Jane who exercises often.

Time/min	Heart rate/ bpm
0	64
1	100
2	108
3	82
4	76
5	64

(i) Suggest **one** way that these results could have been made more reliable.

_____ [1]

(ii) Plot the points and draw a line graph of Jane's results.



[3]

(iii) Jane started exercising at time 0 in the table. Use the information to suggest when she stopped exercising.

_____ min [1]

(iv) Calculate Jane's recovery time.

_____ min [1]

(v) State how the recovery time would change for a person who didn't exercise.

_____ [1]

(b) Suggest **one** way that the Government could encourage people to take more exercise.

_____ [1]

Examiner Only

Marks	Remark

Examiner Only	
Marks	Remark

5 **(a)** The picture below shows cuttings of plants.



© Geoff Wakeling

The statements below give advice on taking cuttings.

A Select cuttings from a healthy plant.
B Quickly insert the cuttings into a pot containing moist compost and place in a large sealed plastic bag.

(i) For each statement suggest why it is necessary to follow this advice.

A _____

_____

B _____

_____ [2]

(ii) Taking cuttings is an example of cloning. Name the type of reproduction involved in taking cuttings.

_____ [1]

(iii) State two advantages of growing plants from cuttings.

1._____

2._____ [2]

(b) Suggest two reasons why many people find cloning of humans unacceptable.

1. _____

2. _____ [2]

Examiner Only	
Marks	Remark

6 The table below shows the results of the first recorded clinical experiment carried out by James Lind to investigate cures for scurvy.

He divided ten sailors who had scurvy into five groups. They all received the same diet but each group had a different addition as shown.

Group	Added to diet	Effect
1	Apple cider	Some improvement
2	Sulphuric acid	None
3	Vinegar	None
4	Seawater	None
5	2 oranges 1 lemon	Complete recovery

(a) Describe and explain fully the results of this investigation.

_____

_____

_____

_____ [3]

(b) **(i)** Name the chemical reaction that takes place in all living cells.

_____ [1]

(ii) Write the word equation for this reaction.

[2]

THIS IS THE END OF THE QUESTION PAPER

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111950

Rewarding Learning

General Certificate of Secondary Education
2011–2012

Science: Single Award (Modular)

Staying Alive
Module 1
Foundation Tier

[GSC11]

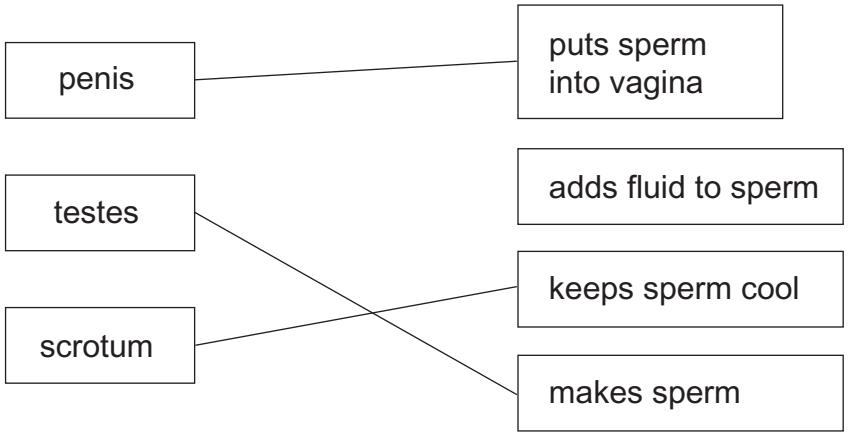
TUESDAY 8 NOVEMBER 2011
1.30 pm–2.15 pm

MARK SCHEME

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AVAILABLE MARKS

1 (a)



[3]

(b)

Changes	Boys only	Girls only	Both
height increase			✓
sperm produced	✓		
ovulation		✓	
pubic hair grows			✓
voice deepens	✓		
hips widen		✓	

[3]

(c) hormone, males [2] 8

2 (a) (i) Any **two** in correct sequence = 1
D B C A [2]

(ii) area A [1]

(iii) iodine [1]

(b) (i) oxygen [1]

(ii) A, (it,/rate) increases as light increases [2]

(iii) Any valid:
greenhouse, more bulbs, clean glass, mirrors [1] 8

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					AVAILABLE MARKS
3	(a)	(i)	400 kCal	[1]	
		(ii)	for protein/growth, more active	[2]	
	(b)	(i)	alcohol	[1]	
		(ii)	solid food	[1]	
		(iii)	fat droplets/emulsion/cloudiness/2 layers/fat rises to top	[1]	
	(c)	(i)	positive in presence of any amount of fat/can't measure it	[1]	
		(ii)	to prevent excess being eaten/named details of health problems e.g. heart disease, diabetes, obesity/on diet/have balanced diet/limit intake/eat health	[1]	8
4	(a)	(i)	repeat or implied	[1]	
		(ii)	6 plots – 2 4 or 5 – 1 Line – 1	[3]	
		(iii)	2 min	[1]	
		(iv)	3 min	[1]	
		(v)	longer/slower/increase	[1]	
	(b)		Any **one** from: free gyms, more PE in school, advertising	[1]	8
5	(a)	(i)	A so cuttings will be healthy, B so cuttings don't dry out	[2]	
		(ii)	asexual	[1]	
		(iii)	Any **two** from: desirable characteristics; quicker; many plants saves money; grow at same rate	[2]	
	(b)		Any **two** from: human rights, embryos killed, determining gender, playing God not natural; no variation	[2]	7
6	(a)		cider/oranges/lemon show improvement; oranges/lemon contain vitamin C; sulphuric acid/vinegar/seawater contains no vitamin C	[3]	
	(b)	(i)	respiration	[1]	
		(ii)	Glucose + Oxygen ⟶ Carbon Dioxide + Water + Energy equation one mark for each side. Deduct [1] for no arrow	[2]	6
				Total	**45**

Rewarding Learning

Centre Number	
71	

Candidate Number

General Certificate of Secondary Education
2010–2011

Science: Single Award (Modular)

Staying Alive
Module 1

Foundation Tier

[GSC11]

GSC11

THURSDAY 19 MAY 2011, MORNING

TIME

45 minutes.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
Write your answers in the spaces provided in this question paper.
Answer **all seven** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 45.
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
Total Marks	

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Examiner Only	
Marks	Remark

1 **(a)** The table below gives three food types.
Complete the table by giving the correct function for each food type.

Choose from:

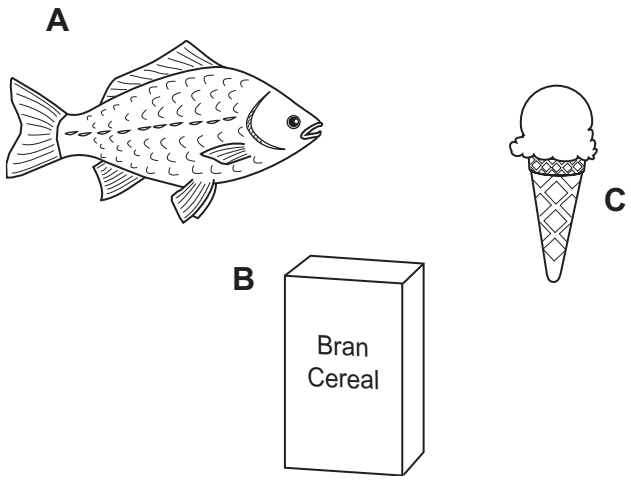
energy : growth and repair

red blood cells : prevents scurvy

Food type	Function
carbohydrate	
vitamin C	
iron	

[3]

(b) Some foods are shown below.



(i) Which food (**A**, **B** or **C**) contains a lot of fibre?

_____ [1]

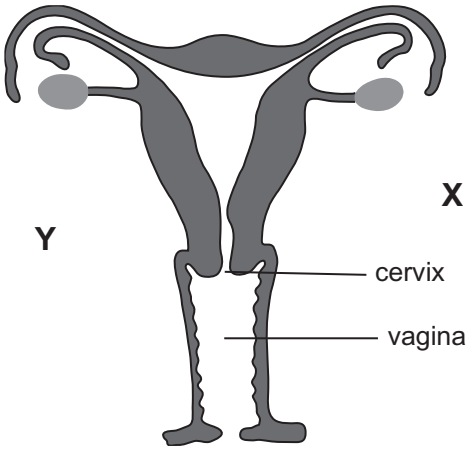
(ii) What is the function of fibre in our diet?

_____ [1]

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Examiner Only	
Marks	Remark

2 **(a)** Below is a diagram of the female reproductive system.



(i) Draw a line from **X** to the wall of the uterus. [1]

(ii) Draw a line from **Y** to a part that produces eggs. [1]

(b) The statements below describe the journey of the sperm through the female reproductive system but not in the correct order.

A enters the uterus

B travels through the cervix

C travels along the oviduct

D enters vagina

Using the letters **A**, **B**, **C** and **D**, put the statements in the correct order.

— — — — [2]

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(c) (i) What process must happen to an egg for pregnancy to occur?

Choose from:

dilation **fertilisation** **contraction**

_____ [1]

(ii) Name the part of the reproductive system that is cut when a woman is sterilised.

_____ [1]

(iii) Suggest a reason why a doctor might refuse this sterilisation operation to a 20 year old single woman.

_____ [1]

Examiner Only	
Marks	Remark

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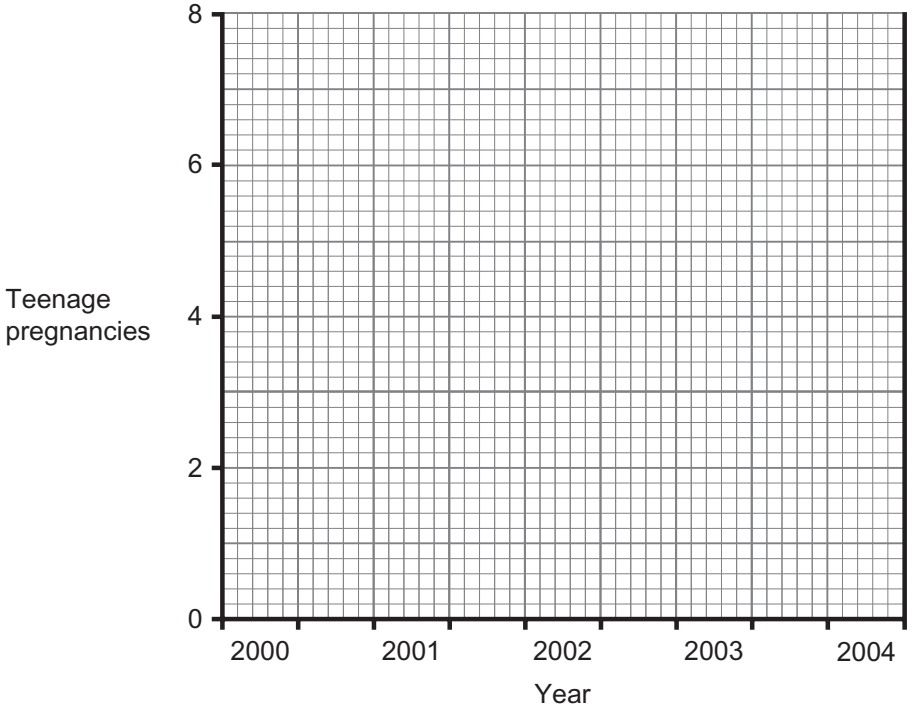
Examiner Only

Marks	Remark

3 **(a)** The table below contains information about the number of teenage pregnancies in a town in Northern Ireland over a five year period.

Year	2000	2001	2002	2003	2004
Teenage pregnancies	8	6	6	2	4

(i) Draw a **bar chart** of this information on the grid below.



[2]

(ii) Between which two years was there the biggest change in the number of teenage pregnancies?

_____ and _____ [1]

(iii) Complete the sentence below.

Between the years 2000 and 2004 the number of teenage

pregnancies _____ [1]

(b) Name one medical condition linked to teenage pregnancy.

Choose from:

diabetes : kidney problems : obesity

_____ [1]

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Examiner Only	
Marks	Remark

4 Below is a drawing of a section of DNA.



(a) **(i)** What name is given to the shape of DNA?

_____ [1]

(ii) What name is given to a small section of DNA?

_____ [1]

(b) DNA is formed into chromosomes which are found in the nucleus of cells. Describe how the chromosomes in egg and sperm cells (gametes) differ from all other cells.

_____

_____ [1]

(c) Given below are nine genotypes.

Aa : SS : ss : Cc : ee
Ff : rr : RR : AA

(i) How many of these genotypes are heterozygous?

_____ [1]

(ii) How many of these genotypes contain **two** dominant alleles?

_____ [1]

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(iii) If black hair is dominant to blond hair state the **phenotypes** for:

bb _____

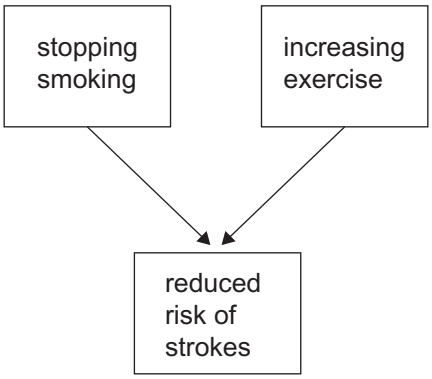
Bb _____ [2]

Examiner Only	
Marks	Remark

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Examiner Only	
Marks	Remark

5 The diagram below shows two lifestyle changes that may reduce the risk of strokes.



(a) (i) State **one** other lifestyle change that may reduce the risk of strokes.

_____ [1]

(ii) Suggest **one** reason why some people do not make these lifestyle changes even though they know the risks.

_____ [1]

(b) Regular health checks can also reduce the risk of strokes. State **one** test that may be done during a health check.

_____ [1]

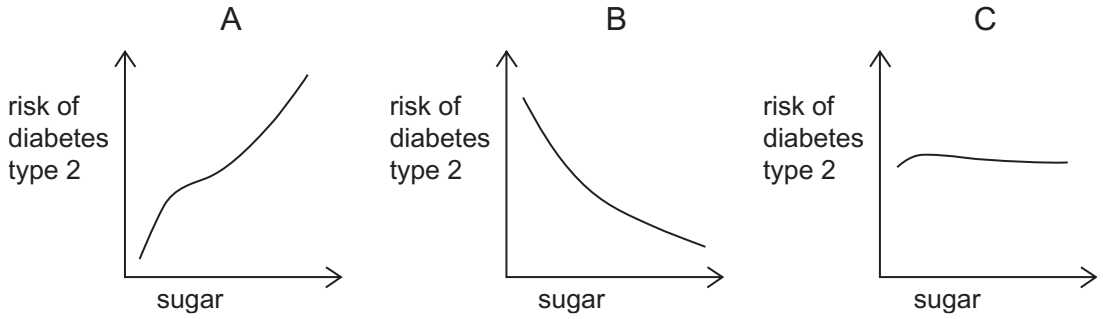
(c) Below are factors which can increase the risk of heart disease and the reasons why. Use lines to link each factor with its correct reason.

Factor	Reason
	Blocks arteries
Too much salt	
	Makes blood clot easily
Too much saturated fat	
	Increases blood pressure

[2]

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(d) The risk of getting diabetes type 2 can be reduced by dietary changes.



(i) Which graph (A, B or C) shows the correct relationship between diabetes type 2 and sugar intake?

_____ [1]

(ii) State one way that diabetes type 1 differs from diabetes type 2.

_____ [1]

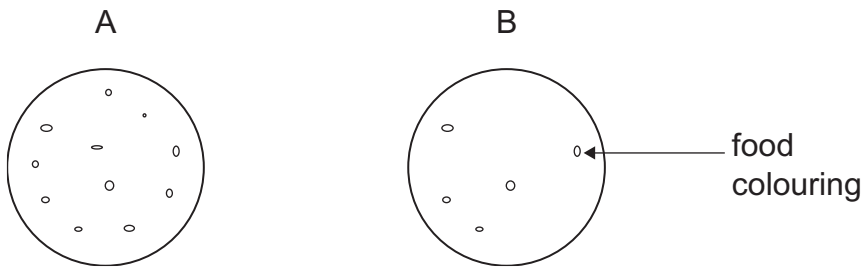
Examiner Only

Marks	Remark

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Examiner Only	
Marks	Remark

6 To investigate their tastebuds two people (A and B) put food colouring on their tongues. A piece of filter paper was then pressed onto the tongue to pick up the colour on the tastebuds. The results are shown below.



(a) (i) State which person (A or B) has the better sense of taste and give a reason for your choice.

_____

_____ [1]

(ii) Give two things that had to be done to ensure these results are valid.

1. _____

2. _____ [2]

(b) A tastebud is an example of a receptor. Name one **effector** in the body.

_____ [1]

(c) The child in the drawing below has just tasted lemon juice and her facial expression shows how sour it was.



Describe the role the brain played in co-ordinating her voluntary response to the sour taste.

_____

_____

_____

_____ [3]

Examiner Only

Marks	Remark

Examiner Only	
Marks	Remark

7 The table below shows how much energy teenagers need to do certain activities for one hour.

Activity	Energy needed/kJ
sleeping	400
watching TV	600
walking	1200
running	2400

(a) State **two** ways that the body uses energy when sleeping.

_____

_____ [2]

(b) Explain fully why the body uses the greatest amount of energy when running.

_____

_____

_____ [3]

(c) Name the process which releases energy from food and state where it is carried out in the body.

_____

_____ [2]

THIS IS THE END OF THE QUESTION PAPER

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Rewarding Learning

General Certificate of Secondary Education
2010–2011

Science: Single Award (Modular)

Staying Alive
Module 1

Foundation Tier

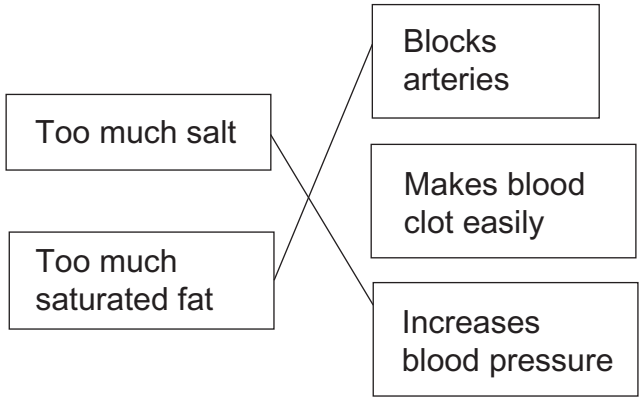
[GSC11]

THURSDAY 19 MAY 2011, MORNING

MARK SCHEME

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				AVAILABLE MARKS
1	**(a)**	energy, prevents scurvy, red blood cells	[3]	
	(b)	**(i)** B	[1]	
		(ii) prevents constipation/reduce risk of bowel cancer aids digestion	[1]	5
2	**(a)**	**(i)** line must be in or touch wall	[1]	
		(ii) line to ovary	[1]	
	(b)	D B A C B A or A C or D B [1] – *any* 2 in correct order	[2]	
	(c)	**(i)** fertilisation	[1]	
		(ii) oviduct/fallopian tube	[1]	
		(iii) permanent/change mind/too young	[1]	7
3	**(a)**	**(i)** all bars correct [2], 3 or 4 correct [1]	[2]	
		(ii) 2002–2003 3–2	[1]	
		(iii) decreased/26	[1]	
	(b)	kidney problems	[1]	5
4	**(a)**	**(i)** helix	[1]	
		(ii) gene/allele/nucleotide	[1]	
	(b)	single/half the amount, paired/double amount, they have 23 pairs, normal/body cells 46	[1]	
	(c)	**(i)** three	[1]	
		(ii) three	[1]	
		(iii) blond, black	[2]	7
5	**(a)**	**(i)** reducing stress/less salt/less fat/less alcohol	[1]	
		(ii) cannot due to work/family/financial, do not believe need to *any* habit, addicted, medical prob. explained	[1]	
	(b)	weight check/bp/urine/cholesterol/bloods test/blood sugar must be regular	[1]	

				AVAILABLE MARKS
	(c)	 [2]		
	(d) **(i)**	A	[1]	
	(ii)	age/treatment/cause type 2 must refer to type 1 need not	[1]	7
6	**(a)** **(i)**	A, most tastebuds	[1]	
	(ii)	1. same size area/paper, same amount of colouring 2. same place/time on tongue same pressure	[2]	
	(b)	muscle/heart	[1]	
	(c)	received signals/sent message from tongue/tastebuds/receptor, sent signal to eyes/mouth/face/muscles/effector	[3]	7
7	**(a)**	any 2 correct e.g. breathing/snoring, heart beating, digestion, keep warm, most exercise, growth and repair [1] brain function/dreaming, most physical, growth [1] repair only [0]	[2]	
	(b)	muscles work harder, need more food/oxygen, to respire, or heart, needs to work harder/beats faster/pump blood faster, to supply muscles *any* 3	[3]	
	(c)	respiration, all body cells	[2]	7
			Total	**45**

Rewarding Learning

Centre Number

71	

Candidate Number

General Certificate of Secondary Education
2010–2011

Science: Single Award (Modular)

Staying Alive
Module 1

Foundation Tier

[GSC11]

GSC11

WEDNESDAY 23 FEBRUARY 2011, MORNING

TIME

45 minutes.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
Write your answers in the spaces provided in this question paper.
Answer **all six** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 45.
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

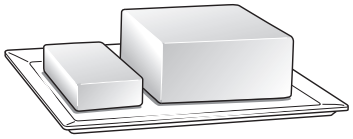
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2	
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5	
6	
Total Marks	

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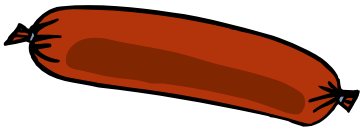
Examiner Only	
Marks	Remark

1 The pictures below show three foods eaten by humans.

Butter



Sausage



Crisps



(a) Complete the sentence below.

Choose from:

energy **insulin** **water** **fat**

These foods all contain a lot of the **FOOD TYPE** _____ which is used as a source of _____ by the body. [2]

(b) A sample of food is tested with Biuret Solution. The solution turned purple in colour.

(i) Which food type must the sample contain?

Choose from:

sugar **protein** **calcium**

_____ [1]

(ii) Name the solution you would use to test for starch.

_____ [1]

(iii) What colour change shows that starch is present?

Circle your answer:

yellow/brown to blue/black

blue to red

brown to yellow [1]

(c) Carol is suffering from anorexia.

(i) Give **one** way this will affect Carol's appearance.

_____ [1]

(ii) Carol's muscles have been damaged by lack of food. Which food type helps build muscles?

Choose from:

fibre **carbohydrate** **protein**

_____ [1]

(iii) Suggest **one** reason why teenage girls may suffer from anorexia.

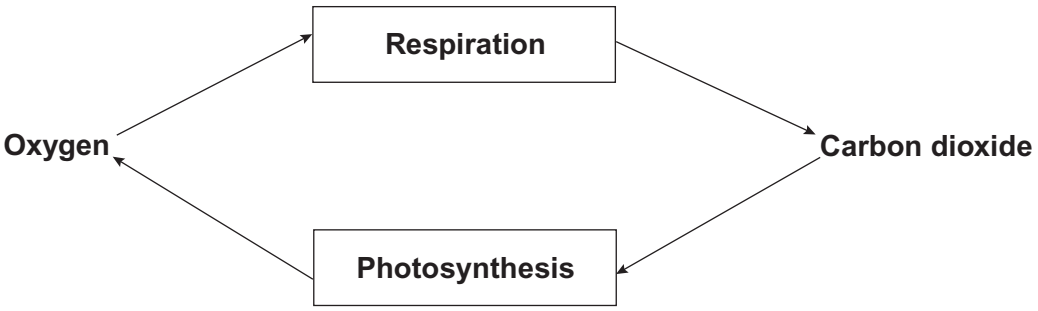
_____ [1]

Examiner Only	
Marks	Remark

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Examiner Only	
Marks	Remark

2 **(a)** The diagram below shows the gases taken in and given out during the processes of photosynthesis and respiration.



Use the diagram and your knowledge to answer the questions below.

(i) Name the process which involves plants and animals taking in oxygen.

_____ [1]

(ii) Photosynthesis only takes place during the day. Give the reason for this.

_____ [1]

(iii) Apart from carbon dioxide name **one** other substance produced during respiration.

_____ [1]

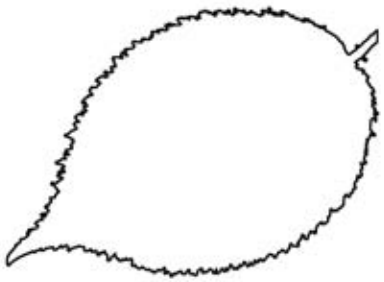
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The picture below shows a leaf that has no chlorophyll (not green) around the edges.



Chlorophyll is necessary to produce starch in the leaf.

(b) On the diagram below shade the area where starch may be present.



[1]

(c) Below are the names of some of the liquids used in testing a leaf for starch and the reasons they are used.

Use lines to link each liquid with the reason why it is used.

LIQUID	REASON
alcohol	to kill the leaf
boiling water	to remove the chlorophyll
	to cool the leaf

[2]

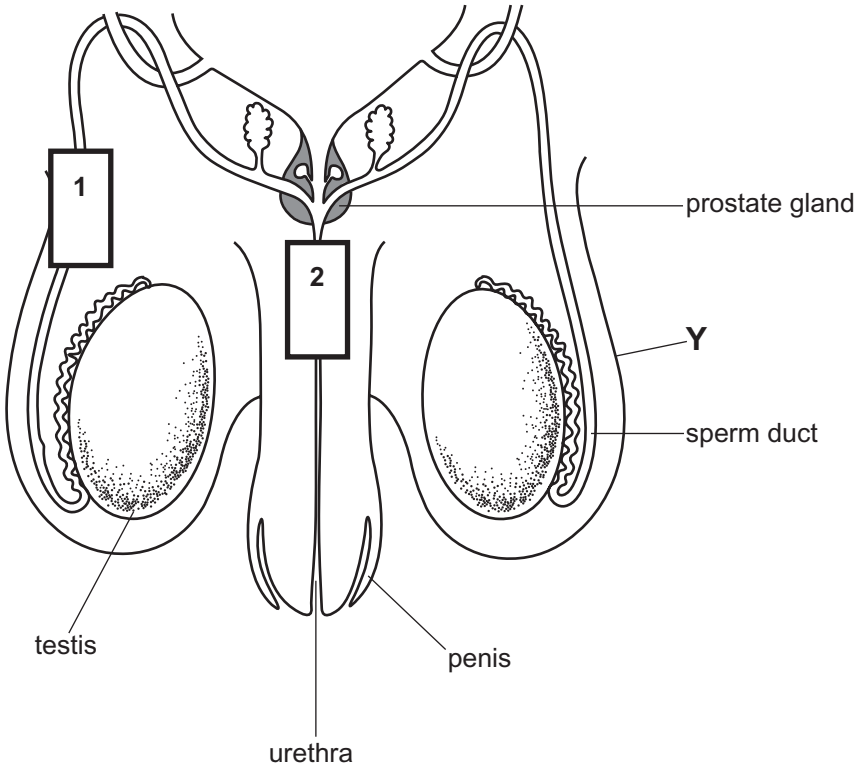
Examiner Only

Marks	Remark

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Examiner Only	
Marks	Remark

3 **(a)** The diagram below shows the male reproductive system.



(i) Name the part labelled **Y**.

_____ [1]

(ii) State the function of the penis in reproduction.

_____ [1]

(iii) On the diagram above draw one arrow in each box (**1 and 2**) to show the direction sperm is travelling in that part of the system. [1]

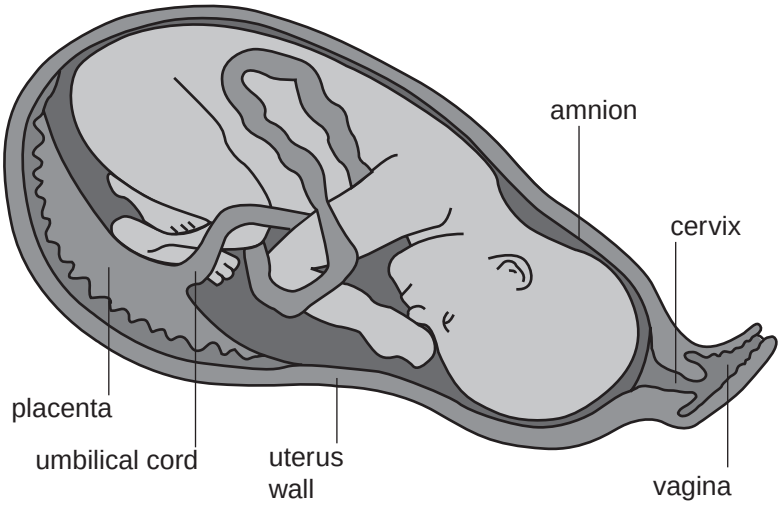
(iv) Name the part that produces sperm.

Choose from:

prostate : testes : sperm duct

_____ [1]

(b) The diagram below shows the baby in the uterus.



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Choose labels from the diagram to name the parts whose function is given in the table below.

The first one has been done as an example.

FUNCTION	PART
Contracts during birth	Uterus wall
Baby comes out here	
Food and oxygen removed from mother's blood	
Contains fluid for protection	
Dilates during birth	

[4]

Examiner Only

Marks	Remark

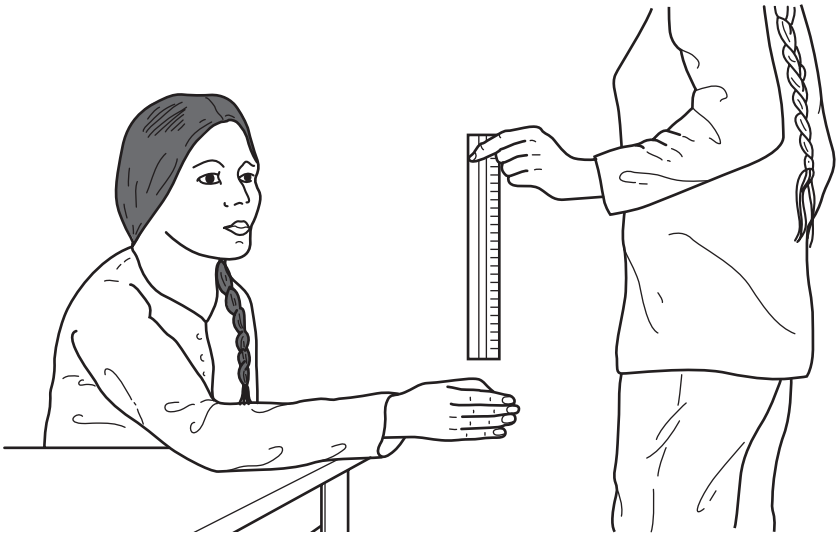
Examiner Only	
Marks	Remark

4 Six examples of actions involving the nervous system are listed below.

(a) Put a tick beside each example that is a **voluntary** action.
One has been done for you.

blinking	_____	heading a ball	_____
reading	✔	running	_____
knee jerk	_____	answering a phone	_____ [2]

(b) Four pupils (A, B, C, and D) decided to compare their reactions. One pupil held the ruler as shown in the diagram below and the pupil sitting caught it as it fell. Each pupil had three attempts.



Their results are shown below.

Attempt	Distance ruler falls for each pupil/cm			
	A	B	C	D
1	4	3	4	3
2	3	10	4	2
3	2	2	1	1
Average distance/ cm	3	5	3	

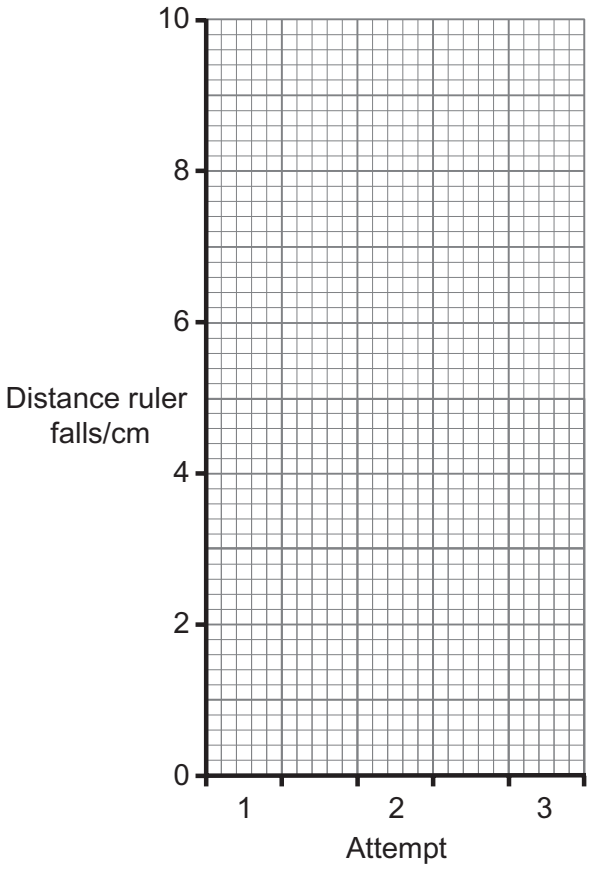
(i) Complete the table above by calculating the average distance for pupil D. [1]

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(ii) On average, which pupil (A, B, C or D) had the fastest reaction?

_____ [1]

(iii) Draw a bar chart showing the results for **pupil B** on the grid below.



[2]

(iv) How do pupil B's results show the importance of doing an experiment more than once?

_____

_____ [2]

Examiner Only

Marks	Remark

Examiner Only	
Marks	Remark

5 **(a)** **(i)** Describe the roles the pancreas and the liver play in keeping blood glucose levels constant.

_____

_____

_____

_____ [3]

(ii) Name the condition which results in the loss of control of blood glucose levels.

_____ [1]

(b) Cystic fibrosis is an inherited disease.

The gene which causes it (f), is recessive to the normal gene (F).

Complete the genetic diagram below to show how two parents who do not suffer from cystic fibrosis can have a child who does.

		f
F		

[3]

(c) Scientists are trying to clone lungs which would replace lungs damaged by cystic fibrosis. Some people do not agree with cloning. Suggest **one** reason for this.

_____ [1]

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Examiner Only	
Marks	Remark

6 **(a)** The table below shows the cost of treating patients for some medical conditions.

Condition	Cost/£
Diabetes type 1	4000
Knee cartilage operation	2000
Heart attack	20000
Cystic fibrosis	5000

(i) Suggest **two** ways that some of the money is used to treat people with diabetes type 1.

_____

_____ [2]

(ii) Suggest **three** reasons why a knee cartilage condition is the cheapest to treat.

_____

_____

_____ [3]

(b) Apart from the cost of treating heart attacks suggest **two** other ways that they can affect society.

_____

_____ [2]

THIS IS THE END OF THE QUESTION PAPER

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Rewarding Learning

General Certificate of Secondary Education
2010–2011

Science: Single Award (Modular)

Staying Alive
Module 1

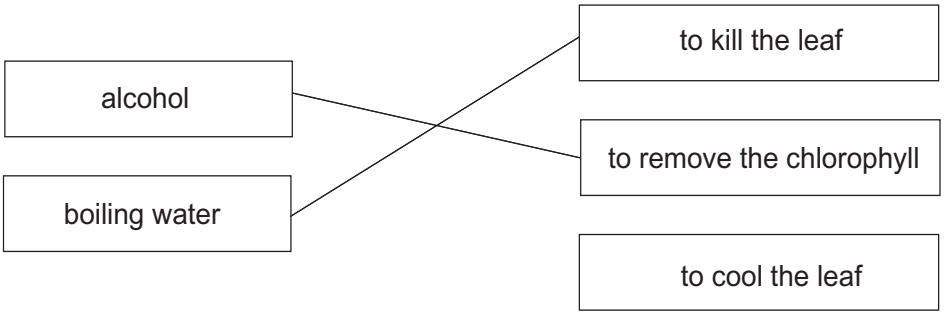
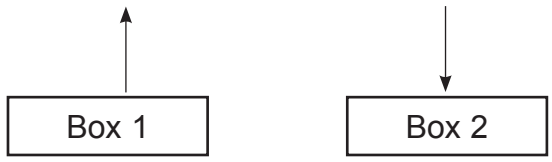
Foundation Tier

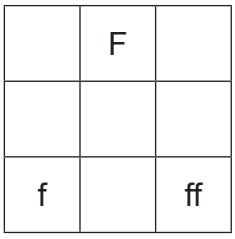
[GSC11]

WEDNESDAY 23 FEBRUARY 2011, MORNING

MARK SCHEME

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				AVAILABLE MARKS
1	**(a)**	fat, energy	[2]	
	(b)	**(i)** protein	[1]	
		(ii) iodine	[1]	
		(iii) brown to blue/black	[1]	
	(c)	**(i)** (very) underweight, slim, skinny, thin, bony	[1]	
		(ii) protein	[1]	
		(iii) fat unacceptable to society/low self esteem/control stress	[1]	8
2	**(a)**	**(i)** respiration	[1]	
		(ii) need light/energy	[1]	
		(iii) water (accept correct formula)	[1]	
	(b)	shade area follow leaflets not touching edge (except base)	[1]	
	(c)		[2]	6
3	**(a)**	**(i)** scrotum	[1]	
		(ii) put/deposit sperm into vagina/release sperm	[1]	
		(iii) 	[1]	
		(iv) testes	[1]	
	(b)	Vagina Placenta Amnion Cervix	[4]	8

			AVAILABLE MARKS
4	**(a)**	heading a ball ✓ reading ✓ knee jerk 3 correct [2] 1 or 2 [1] running ✓ answering a phone ✓ deduct [1] for any more [3] [2]	
	(b)	**(i)** 2 [1]	
		(ii) D if part **(i)** = 4+ then accept A or C [1]	
		(iii) all correct [2], 1 or 2 correct [1] [2]	
		(iv) identifying an anomalous result/2nd (much) bigger/not all same/one not accurate would have been less accurate/more reliable/average [2]	8
5	**(a)**	**(i)** levels rise/insulin (pancreas) produced/glucose to glycogen/stored in liver/levels fall any **three** [3]	
		(ii) diabetes (Type 1) [1]	
	(b)	 Parents F and f [2] F1 if correct [1] [3]	
	(c)	Any ethical issue, e.g. religious/unnatural/consequences (designer babies) [1]	8
6	**(a)**	**(i)** medication (includes equipment) therapy/medical staff, hospital stays/long term complications any **two** [2]	
		(ii) short term, can be cured/easier to treat, less equipment, less serious, less medication/less staff/less hospital time/one operation [3]	
	(b)	loss of job, cost of benefits/emotional cost to families, family takes care of/sick pay, cost to employers. [2]	7
		Total	**45**

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Rewarding Learning

Centre Number

71	

Candidate Number

General Certificate of Secondary Education
2010–2011

Science: Single Award (Modular)

Staying Alive
Module 1

Foundation Tier

[GSC11]

GSC11

TUESDAY 9 NOVEMBER 2010, AFTERNOON

TIME

45 minutes.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
Write your answers in the spaces provided in this question paper.
Answer **all seven** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 45.
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
Total Marks	

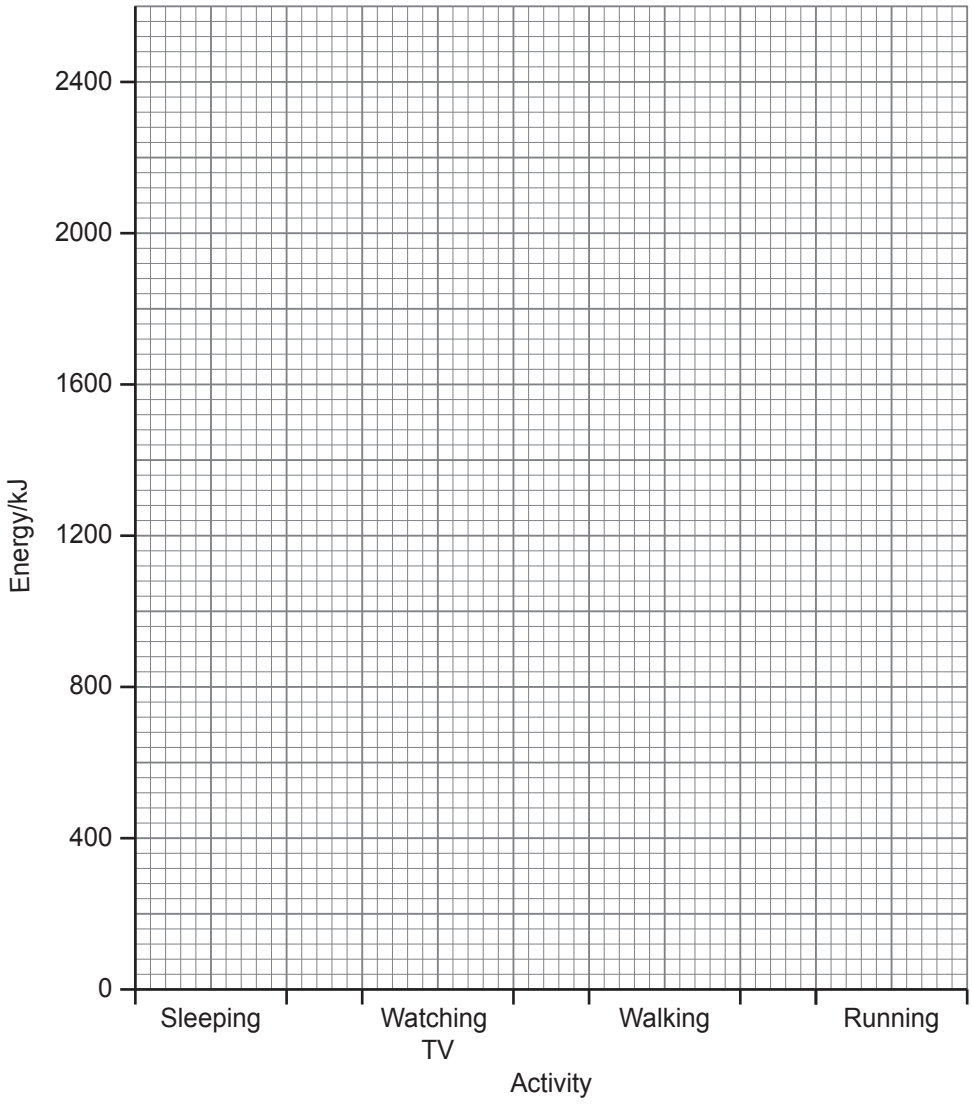
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Marks	Remark

1 **(a)** The table below shows how much energy a teenage girl needs to do certain activities for one hour.

Activity	Energy needed/kJ
sleeping	400
watching TV	600
walking	1200
running	2400

(i) Draw a **bar chart** of this information on the grid below.



[2]

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(ii) Calculate the difference between the amount of energy needed to sleep for one hour and run for one hour.

Show your working out.

_____ kJ [2]

(iii) Teenage boys are sometimes more active than teenage girls. How will this affect the amount of energy boys need compared to girls?

Choose from:

increase : decrease : be the same

_____ [1]

(b) Complete the sentences below.

Choose from:

photosynthesis : carbon dioxide : oxygen : respiration

The body gets energy by the process of _____ .

This produces the gas _____ . [2]

Examiner Only

Marks	Remark

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Examiner Only	
Marks	Remark

2 **(a)** A sample of yoghurt is tested with Benedict's solution. The solution changed from a blue colour to red.

(i) Which food type must the yoghurt contain?

Choose from:

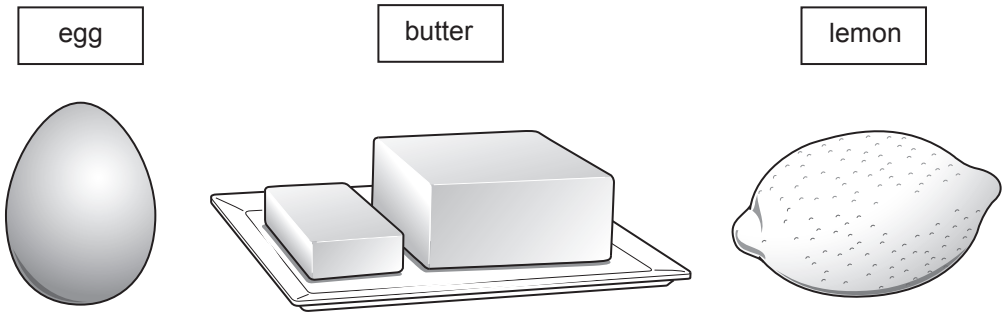
sugar : **fat** : **vitamin D**

_____ [1]

(ii) Name a food **type** which would change iodine from orange to blue/black.

_____ [1]

(b)



Choose **one** food from above which:

(i) contains protein needed for growth and repair.

_____ [1]

(ii) contains a large amount of vitamin C.

_____ [1]

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(c) Below are some statements about the disease scurvy.

1. In the 18th century it was not known why sailors suffered from scurvy on long sea trips.

2. If there was a supply of limes on board fewer sailors suffered from scurvy.

3. Scientists thought that limes prevented scurvy.

Which of these sentences (**1**, **2** or **3**) is a conclusion?

_____ [1]

(d) **(i)** Andrej is very overweight. Apart from eating less food suggest **one** way that he could lose weight.

_____ [1]

(ii) Suggest **one** way that Andrej being very overweight will affect other people in his life.

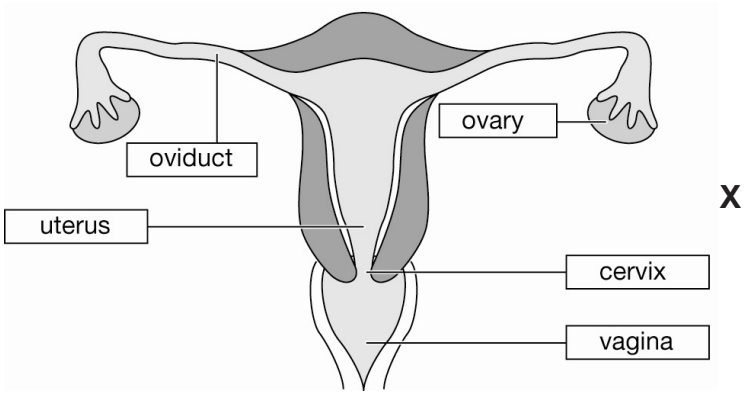
_____ [1]

Examiner Only	
Marks	Remark

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Examiner Only	
Marks	Remark

3 **(a)** Below is a diagram of the female reproductive system.



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The phrases below describe the journey of the sperm from leaving the penis to fertilising the egg, but they are in the wrong order.

A swims through cervix
B enters vagina
C swims through uterus
D fertilises egg
E enters oviduct

Using the letters (**A**, **B**, **C**, **D** and **E**) place the phrases in the correct order below. The first one has been done for you.

B _____ _____ _____ _____ _____ [2]

(b) **(i)** Females can have an operation to stop them having children. On the diagram above draw a line from **X** to one of the parts cut during this operation. [1]

(ii) Explain fully how this operation prevents pregnancy.

_____

_____ [2]

(iii) Give **one** medical problem associated with teenage pregnancies.

_____ [1]

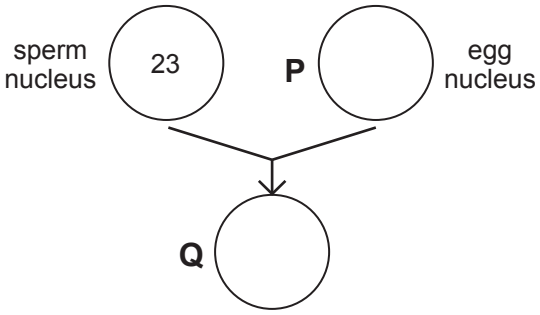
Examiner Only	
Marks	Remark

4 **(a)** The boxes below show some reproductive processes and their descriptions. Use lines to link each process to its correct description. One description will not be used.

Process	Description
	Placenta ejected
Implantation	
	An egg is released
Division	
	One cell becomes a ball of cells
Delivery of afterbirth	
	Fertilised egg burrows into uterus wall

[3]

(b) Complete the diagram below by writing the number of chromosomes in nucleus **P** and nucleus **Q**.



[1]

(c) Complete the sentence below.

Choose from:

heterozygous : the phenotype : different : homozygous

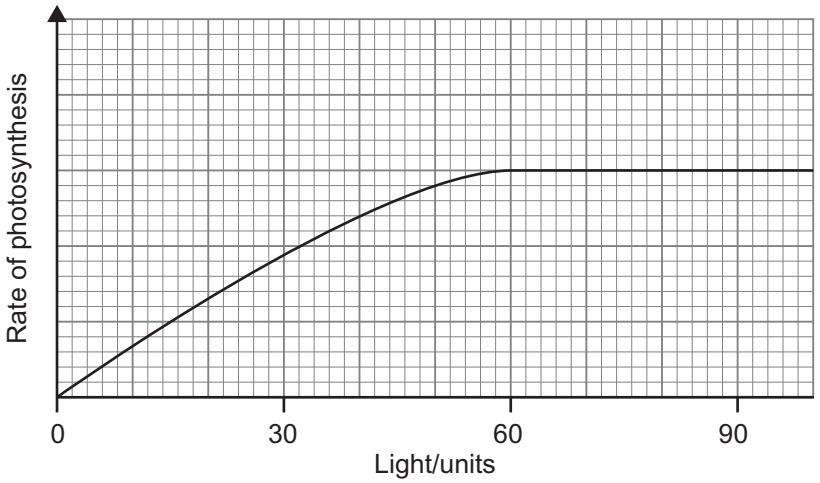
The genotype **BB** is _____ for brown eyes because the offspring have inherited the same gene from each parent.

[1]

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5 The graph below shows how light affects the rate of photosynthesis.

Examiner Only	
Marks	Remark



(a) A gardener has to decide how much light he needs in his greenhouse. He has a choice of 30, 60 or 90 units of light. The more units of light, the greater the cost.

1. Which should he choose?

_____ units of light [1]

2. Explain your choice.

_____

_____ [2]

(b) Suggest **two** ways in which the process of photosynthesis benefits humans.

1. _____

2. _____ [2]

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Examiner Only	
Marks	Remark

6 **(a)** Complete the table below by naming a structure in the body that carries out each function.

Function	Name of structure
co-ordinator	
effector	
receptor	

[3]

(b) Explain fully how a reflex action helps to avoid a severe burn if you accidentally touch something hot.

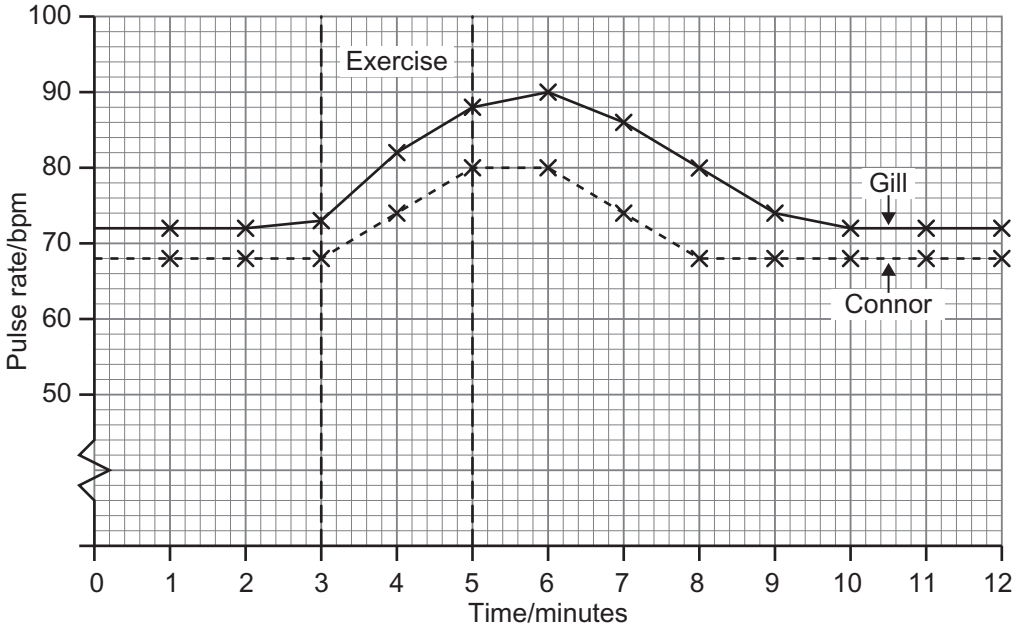
_____

_____ [2]

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Examiner Only	
Marks	Remark

(c) The graph shows the pulse rate of two 15 year old students before, during and after exercise. Exercise took place from 3–5 minutes.



(i) How many minutes after starting exercise did Gill's pulse rate reach its peak?

_____ minutes [1]

(ii) Which pupil (Gill or Connor) recovered quicker from exercise? Explain your answer.

_____

_____ [1]

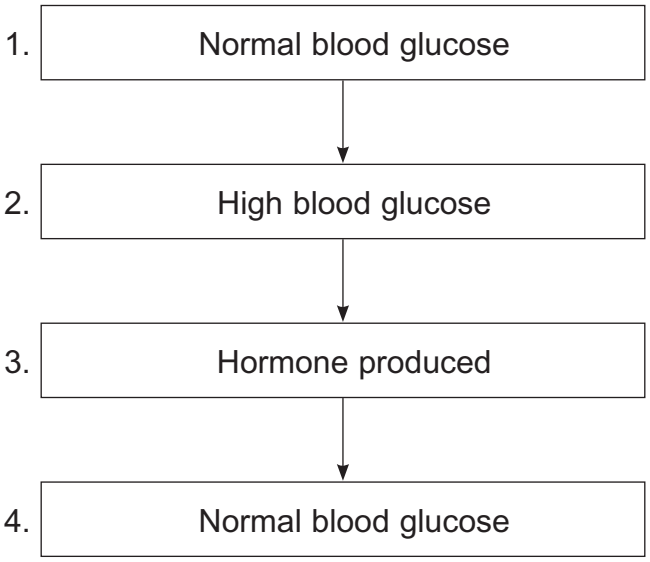
(iii) Gill continued to exercise every day for a number of weeks but Connor stopped exercising. Suggest how this would affect their recovery rates.

_____

_____ [1]

Examiner Only	
Marks	Remark

7 The flow chart below shows some stages in the control of blood glucose levels.



(a) **(i)** Suggest what happened between stages 1 and 2 to increase the person's blood glucose level.

_____ [1]

(ii) Name the hormone produced at stage 3 and describe how it works to reduce glucose levels.

_____

_____

_____ [3]

(b) The number of people suffering from Type 2 diabetes is increasing.

(i) Suggest **two** reasons for this.

_____

_____

_____ [2]

(ii) State **one** difference between Type 1 diabetes and Type 2 diabetes.

_____

_____ [1]

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Rewarding Learning

General Certificate of Secondary Education
2010–2011

Science: Single Award (Modular)

Staying Alive
Module 1

Foundation Tier

[GSC11]

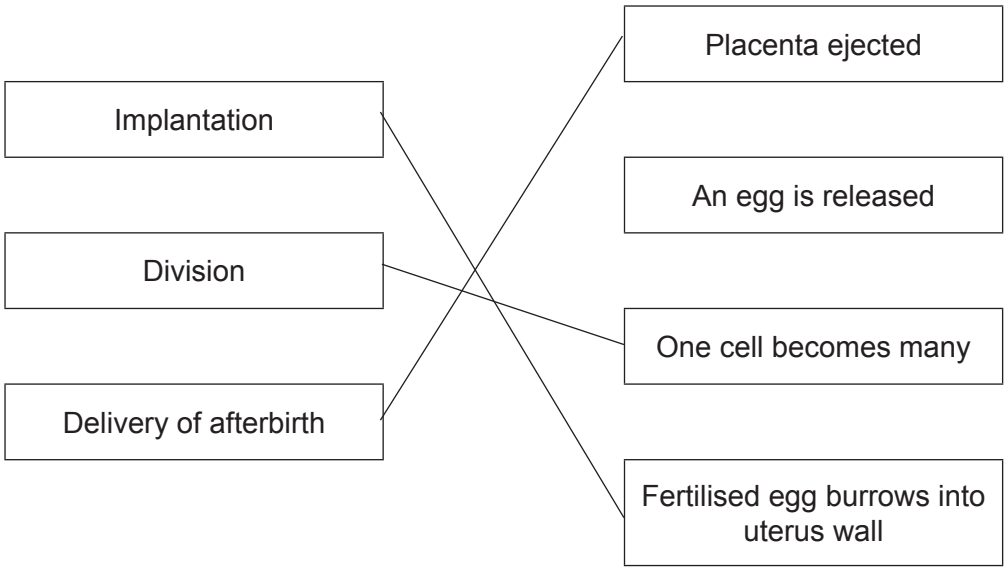
TUESDAY 9 NOVEMBER 2010, AFTERNOON

MARK SCHEME

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					AVAILABLE MARKS
1	**(a)**	**(i)**	[$\frac{1}{2}$] each correct bar (round down)	[2]	
		(ii)	2000 (working out not needed)	[2]	
		(iii)	increase	[1]	
	(b)		respiration carbon dixodie	[2]	7
2	**(a)**	**(i)**	sugar	[1]	
		(ii)	starch/carbohydrate	[1]	
	(b)	**(i)**	egg	[1]	
		(ii)	lemon	[1]	
	(c)		3	[1]	
	(d)	**(i)**	exercise more	[1]	
		(ii)	family/employer/emotional activity/financial	[1]	7
3	**(a)**		A–C–E–D [2] (All correct [2],1 mistake [-1])	[2]	
			A–C/ C–E/ E–D } [1]		
	(b)	**(i)**	to one oviduct	[1]	
		(ii)	prevents sperm reaching egg/egg entering oviduct prevents fertilisation	[1] [1]	
		(iii)	kidney damage/STDs/hypertension/anaemia (AIDS)	[1]	6

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			AVAILABLE MARKS
4	**(a)**	 [3]	
	(b)	P 23, Q 46 [1]	
	(c)	homozygous [1]	5
5	**(a)**	1. 60/59/58 [1] 2. Highest rate [1]; any more wasted/cheaper [1] [2]	
	(b)	1. Food 2. Oxygen [2]	5
6	**(a)**	brain/spinal cord; muscle; any correct example of receptor; sense organ/pain sensor [3]	
	(b)	brain not control/spinal cord is, faster, shorter pathway [2]	
	(c)	**(i)** 3 [1]	
		(ii) Connor recovers 3 mins Gill 5 mins/shorter recovery time [1]	
		(iii) Gill gets shorter and Connor's increases in length [1] (improves) (gets worse)	8

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				AVAILABLE MARKS
7	(a)	(i)	had a meal (energy drink not acceptable) [1]	
		(ii)	insulin; causes liver; to absorb glucose; stores as glycogen; increases respiration [3]	
	(b)	(i)	Any **two:** more processed/junk food; more obesity; less exercise (sugary) (fatty) [2]	
		(ii)	age of onset/treatment/cause – Type must be stated [1]	7
			Total	**45**

GCSE

Science: Single Award (Modular)

End of Module Tests

May 2010

Mark Schemes

Issued: October 2010

Rewarding Learning

General Certificate of Secondary Education
2009–2010

Science: Single Award (Modular)

Staying Alive
Module 1

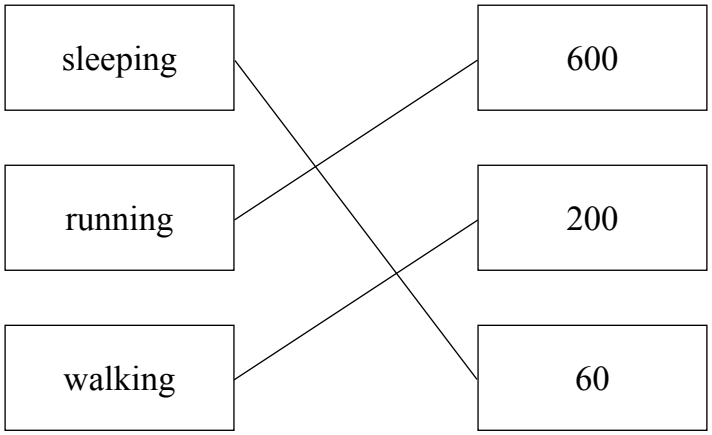
Foundation Tier

[GSC11]

THURSDAY 20 MAY 2010, MORNING

MARK SCHEME

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			AVAILABLE MARKS
1	**(a)**		
		[l] each activity [3]	
	(b) **(i)**	fats/carbs not any named food (ignore a correct name with fat/carb) fatty foods [1]	
	(ii)	more : heart [2]	
	(iii)	diabetes (ignore answer with heart) [1]	7
2	**(a)**		

contracts to push baby out	uterus
dilates to make room for baby's head	cervix
carries food and oxygen to baby	umbilical cord
ruptures so waters break	amnion/amniotic sac

[4]

	(b) **(i)**	5 bars correct [2] 3/4 bars correct [1] [2]	
	(ii)	12 and 13 (accept 4–7) [1]	
	(iii)	pubic, body, underarm hair/voice deepens/facial hair/moody, feel down, emotional/sex drive more muscular (✓) sperm produce/penis enlarge/ testes bigger (✓) puberty (✓) no ref. to female traits any **two** [2]	9

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				AVAILABLE MARKS
3	**(a)**	**(i)** chemical/stored	[1]	
		(ii) thermometer	[1]	
	(b)	DACE ACE correct 2 mk DAC – 2 mk/BD, DA, AC, CE – 1 mk BDCEA [2]	[3]	
	(c)	11, 20	[2]	
	(d)	**(i)** same amount of water	[1]	
		(ii) repeat/average	[1]	9

4 **(a)** **(i)**

blond	Mrs
straight	Mr
receding	Mrs
attached	Mrs

1/2 mark each round down [4]

(ii)

b	Bb	bb
b		bb

F1 correct 1 mk
Mother correct 1 mk

If Mother (Bb) All F1 consequential (✓)

[2]

(b) variations, alleles [2] 8

5 **(a)** **(i)** 40 [1]

(ii) 125 Very poor [1]
Allow 121+

(iii) Exercise (more) no ref. to diet/genetics/ill
Stronger heart [1]

(b) **(i)** Stop smoking/reduce stress/exercise more, not alcohol [1]

(ii) Any valid (must relate to **(b)(i)**)
Happy with lifestyle/can't be bothered [1] 5

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				AVAILABLE MARKS
6	**(a)**	**(i)** high in fat, grease, high energy/calorie Stored as fat Any **two**	[2]	
		(ii) Balanced diet [1], high in vitamins [1] to keep her healthy (named problem) [1] reduce risk of heart attack [1]	[2]	
	(b)	iron, red (blood) cells	[2]	
	(c)	bulimia – binge eating/vomiting	[1]	7
			Total	**45**

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Rewarding Learning

Centre Number

71	

Candidate Number

General Certificate of Secondary Education
2009–2010

Science: Single Award (Modular)

Staying Alive
Module 1
Foundation Tier

GSC11

[GSC11]

WEDNESDAY 24 FEBRUARY 2010, MORNING

TIME

45 minutes.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
Write your answers in the spaces provided in this question paper.
Answer **all seven** questions.

INFORMATION FOR CANDIDATES

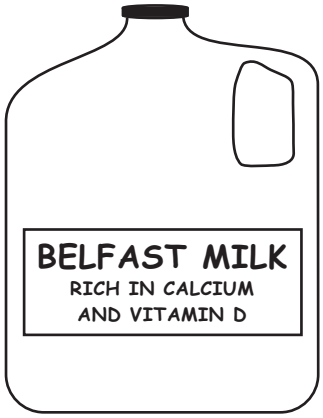
The total mark for this paper is 45.
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

For Examiner's use only	
Question Number	**Marks**
1	
2	
3	
4	
5	
6	
7	
Total Marks	

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1 Below is a diagram of a container of milk.



(a) Milk contains a lot of calcium.
Give **one** function of calcium in the body.

Choose from:

white blood cells : strong bones : red blood cells

_____ [1]

(b) The label states that this milk is high in another food type.
Give the name of this food type.

_____ [1]

(c) Suggest a reason why this milk might be a useful addition to the diet of a pregnant woman.

_____ [1]

(d) Vitamin C is also needed in the diet.
Name a food that is high in vitamin C.

_____ [1]

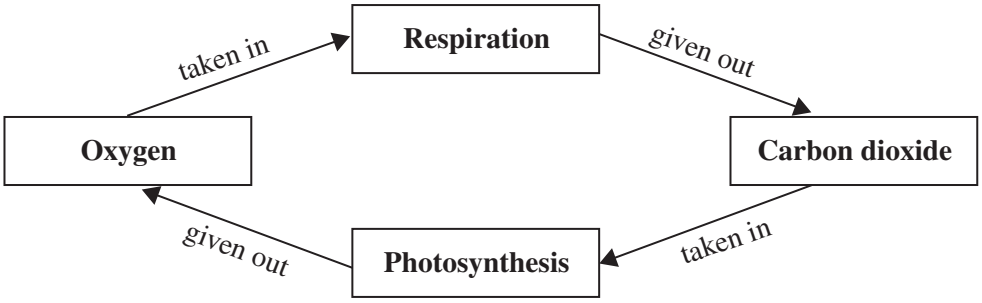
Examiner Only

Marks	Remark

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Examiner Only	
Marks	Remark

2 **(a)** The diagram below shows the gases taken in and given out during the processes of photosynthesis and respiration.



Use the **diagram** and **your knowledge** to answer parts **(i)** to **(iii)** below.

(i) Name the gas which is used in the process of respiration.

_____ [1]

(ii) Complete the sentences below.

Plants and animals give out carbon dioxide during a process called _____. Photosynthesis uses carbon dioxide and is only carried out by green _____. [2]

(iii) Apart from carbon dioxide, name **one** other substance used in photosynthesis.

_____ [1]

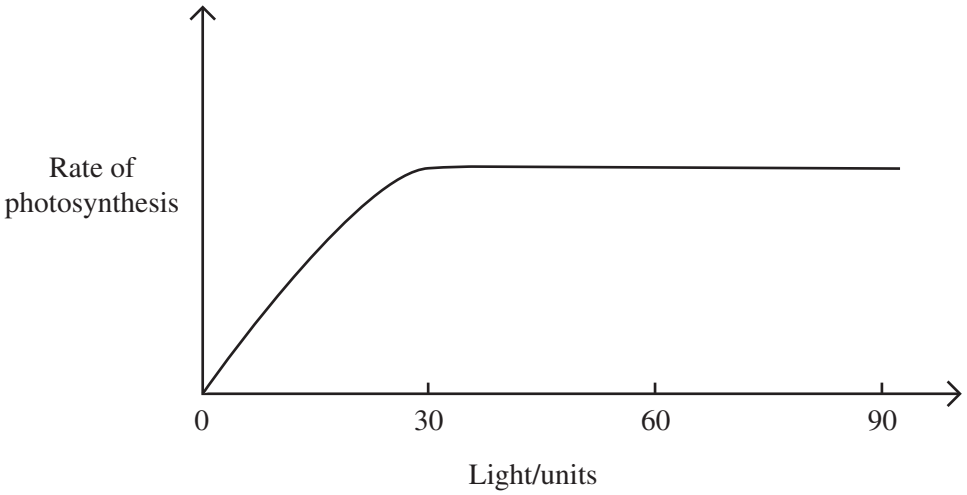
(b) State why humans would starve if there was no photosynthesis.

_____

_____ [1]

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(c) The graph below shows how light affects the rate of photosynthesis.



Use the graph and your knowledge to complete the sentence below.

(i) As the amount of light increases between 0 and 30,

the rate of photosynthesis _____. [1]

(ii) A gardener has to decide how much light he needs in his greenhouse. He has a choice of 30, 60 or 90 units of light. The more units of light, the greater the cost.

1. Which should he choose?

_____ units of light [1]

2. Explain your choice.

_____

_____ [2]

Examiner Only

Marks	Remark

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Examiner Only	
Marks	Remark

3 **(a)** The box below shows nine genotypes.

Pp : BB : rR : Bb : bB : Rr pp : RR : pP

(i) How many of these genotypes are homozygous?

_____ [1]

(ii) How many of these genotypes have **two** recessive alleles (genes)?

_____ [1]

(b) Brown eyes are dominant to blue eyes.

Circle the genotype below which will give blue eyes.

BB : bb : Bb [1]

(c) List the following structures in order of size, starting with the smallest.

gene : sperm : chromosome : nucleus

Smallest _____

_____

_____

Largest _____ [2]

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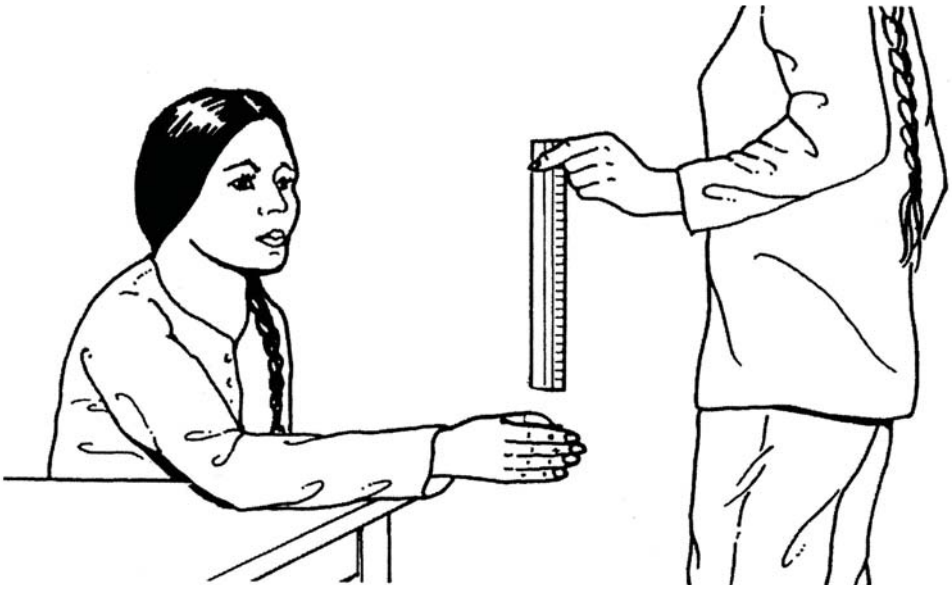
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(Questions continue overleaf)

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4 Two pupils are testing the speed of reactions.

Examiner Only	
Marks	Remark



© *Science at Work – Body Maintenance by L Mooney & A Rivers, published by Longmans, 1992, ISBN 0582078245*

The girl sitting has to catch the ruler as quickly as she can.

(a) (i) Name the type of reaction involved.

Choose from:

sensory : reflex : voluntary

_____ [1]

(ii) Name the main sense organ involved in this reaction.

_____ [1]

(iii) What role do the arm muscles play in this reaction?

Choose from:

senses : effector : control

_____ [1]

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(b) The table below shows the results of the girl catching the ruler eight times.

Try	1	2	3	4	5	6	7	8
Time taken/0.1 s	15	15	12	11	9			6

(i) Complete the table by suggesting times for try 6 and try 7. Write your answers in the table. [1]

(ii) Describe the difference in time taken between try 1 and try 8 and suggest a reason for this.

_____

_____[2]

(c) Name the two parts that make up the Central Nervous System (CNS).

_____ and _____ [1]

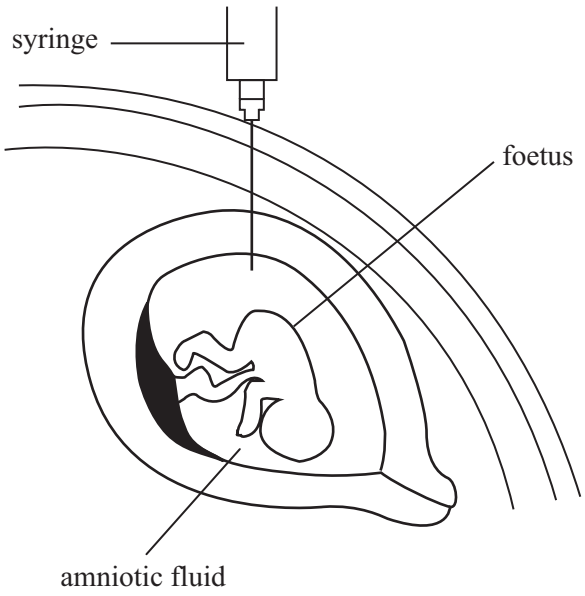
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Marks	Remark

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Examiner Only	
Marks	Remark

5 The diagram below shows a foetus being tested for inherited diseases.



© CCEA

(a) Name **one** inherited disease.

_____[1]

(b) If the test shows that this foetus has an inherited disease, the parents will have to make an important decision. What are their options?

_____

_____[1]

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(c) Given below are issues these parents will have to consider and explanations of what they mean.

Use lines to match each issue with its explanation.
One explanation will not be used.

Issue	Explanation
	The cost involved in raising a child with an inherited disease
Financial	
	Whether something is right or wrong
Ethical	
	How something affects individuals and all of society

[2]

Examiner Only

Marks	Remark

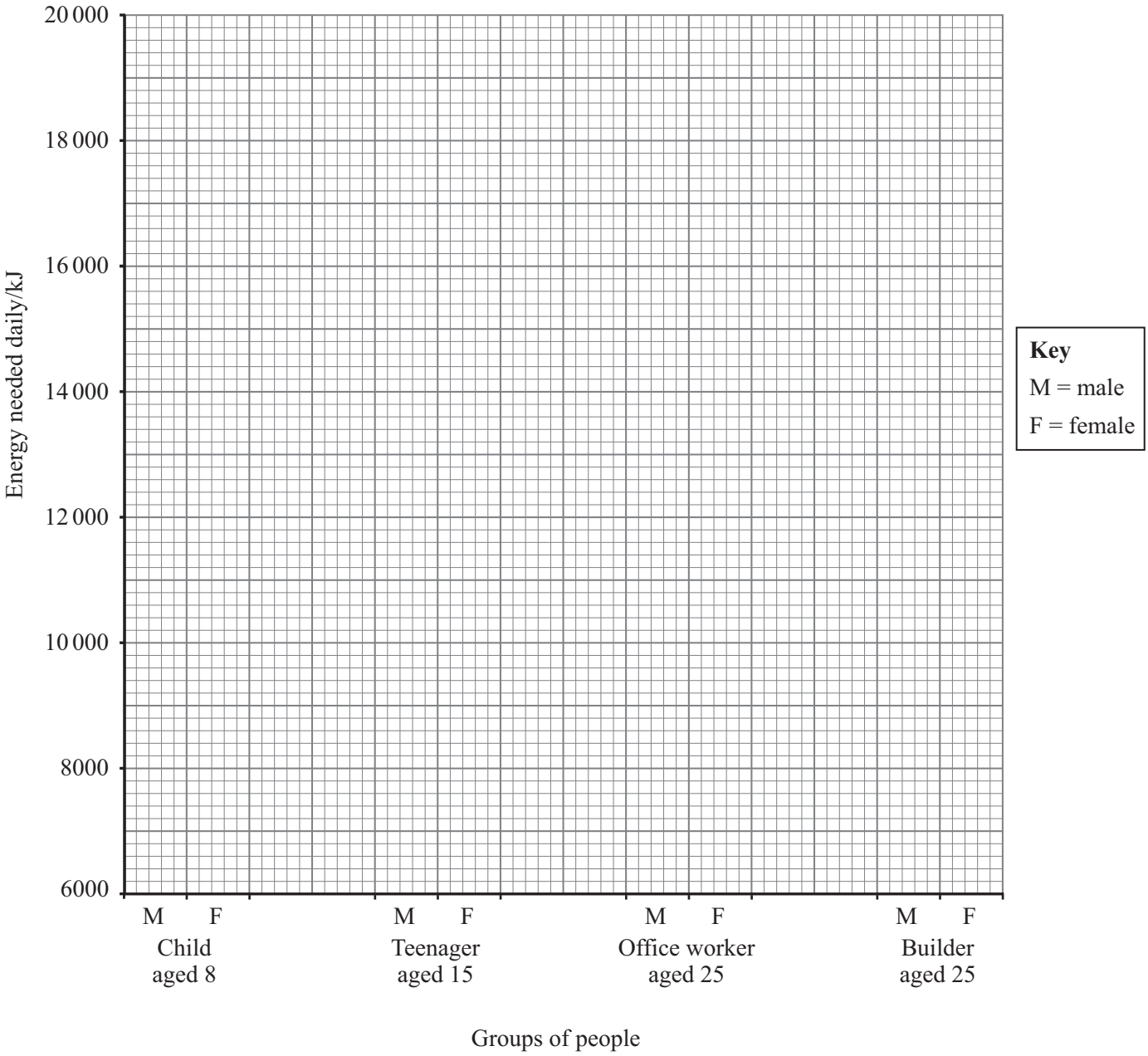
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Examiner Only	
Marks	Remark

6 **(a)** The table below shows the daily amount of energy needed by different groups of people.

	Energy needed daily/kJ	
Groups of people	**Male**	**Female**
Child aged 8	8800	8800
Teenager aged 15	12 600	9600
Office worker aged 25	11 600	9500
Builder aged 25	20 000	12 600

(i) Draw a **bar chart** of these energy needs on the grid below. [2]



(ii) Describe and explain the difference in the amount of energy needed daily by the male office worker and the male builder.

_____

_____

_____[2]

(b) Below is some of the equipment you would use to compare the amount of energy in crisps to the amount of energy in shredded wheat.

boiling tubes : stand : measuring cylinder :

forceps : Bunsen burner : thermometer

Describe how you would carry out this experiment.

Your answer should include **one** thing done to make the results valid. (fair test)

_____

_____

_____

_____

_____

_____[4]

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Marks	Remark

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Examiner Only	
Marks	Remark

7 **(a)** In a TV advertisement for Flora Buttery a chef said "most people prefer the taste of Flora to that of Lurpak Lighter Spreadable".



© "Flora and Flora Buttery are trade marks of Unilever Plc. Image reproduced with their kind permission"



© Arla Foods Ltd

Small print at the bottom of the screen then states:

"Out of 200 people surveyed, 48% preferred Flora Buttery, 45% Lurpak Lighter Spreadable, 7% had no preference".

(i) Calculate how many more people preferred Flora to Lurpak. Show your working out.

_____ [2]

The Advertising Standards Agency (ASA) concluded that the advertisement was "likely to mislead".

(ii) Use this information to suggest **two** reasons why the ASA reached this conclusion.

_____

_____

_____

_____[2]

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(iii) Give **one** reason why people with heart disease should use these products sparingly.

_____

_____[1]

(b) Another common disease in the UK is diabetes Type 2.

(i) Give **two** reasons why the number of young people with diabetes Type 2 is increasing.

_____

_____

_____[2]

(ii) Apart from heart disease, give **one** long-term medical problem (complication) associated with untreated or poorly controlled diabetes.

_____[1]

THIS IS THE END OF THE QUESTION PAPER

Examiner Only	
Marks	Remark

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2090-011-1

GCSE

Science: Single Award (Modular)

March 2010

Mark Schemes

Issued: May 2010

Rewarding Learning

General Certificate of Secondary Education
2009 – 2010

Science: Single Award (Modular)

Staying Alive
Module 1
Foundation Tier

[GSC11]

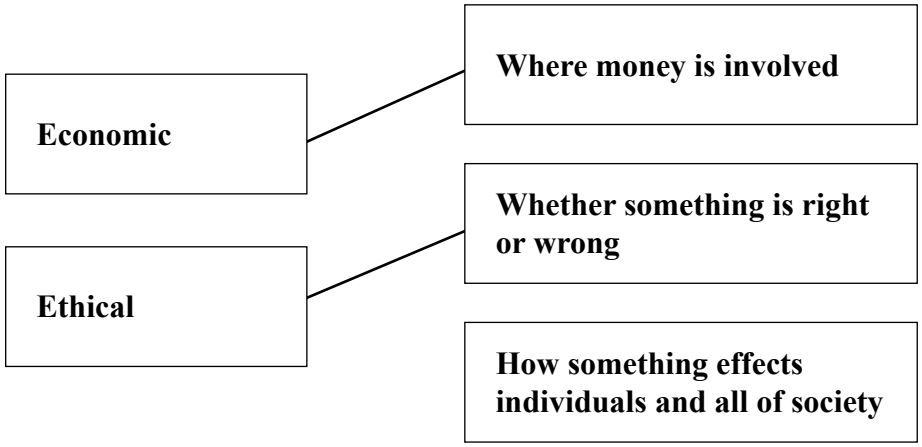
WEDNESDAY 24 FEBRUARY 2010, MORNING

MARK SCHEME

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				AVAILABLE MARKS
1	**(a)**	strong bones	[1]	
	(b)	vitamin (D)	[1]	
	(c)	growing **baby** Take any ref to food as neutral	[1]	
	(d)	(**citrus fruit**) or named	[1]	4
2	**(a)**	**(i)** oxygen	[1]	
		(ii) respiration; plants (leaf/grass)	[2]	
		(iii) water	[1]	
	(b)	starts energy chain/provides food/we eat plants (✓)/no food/ plants/crops not grow	[1]	
	(c)	**(i)** increases	[1]	
		(ii) 1. 30 Rate 60, 90	[1]	
		2. gives highest rate/anymore no effect/**waste** of money is cheaper (only one makes diff) (Any **two**)	[2]	9
3	**(a)**	**(i)** 3	[1]	
		(ii) 1	[1]	
	(b)	bb	[1]	
	(c)	gene, chromosome; nucleus, sperm [2] Any 3 correct order [1]	[2]	5
4	**(a)**	**(i)** voluntary	[1]	
		(ii) eyes	[1]	
		(iii) effector	[1]	
	(b)	**(i)** any combination of numbers between 9 and 6	[1]	
		(ii) got shorter; practice/know what to do/get used to/ more ready for/or stated in numbers	[2]	
	(c)	brain, **spinal cord**	[1]	7

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		AVAILABLE MARKS
5	**(a)** cystic fibrosis or any correct Heart disease (✗) Downs Syndrome [1]	
	(b) whether to have it aborted or not [1]	
	(c) **Type of issue** **Explanation**  [2]	4
6	**(a)** **(i)** All 8 bars correct [2] 6 or 7 correct [1] less 6 [0] [2]	
	(ii) builder needs more; as more active gives numbers [2]	
	(b) measure out water record starting temperature/set food alight using BB/ place under the water in the boiling tube/calculate rise in temp [3] max. Same water volume/food held same distance from water/ same food mass/repeat [1] max. burn for same time [1] [4]	8

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							AVAILABLE MARKS
7	**(a)**	**(i)**	3% [1]; 6 [2]	gives	Flora – 96 Lurpak – 90	arrow without if nos in correct order [2]	
		(ii)	Ad implies that a lot of people preferred Flora but only small amount actually did/more people showed no preference/ only small numbers/small print (Any **two**) 7% showed no preference/could have been Lurpak lot buying Lurpak as well more/7% liked either [2]				
		(iii)	High in fat/cholesterol [1]				
	(b)	**(i)**	Any **two** from: Increasing obesity/less exercise/ more processed or sugary foods/fast food [2]				
		(ii)	Blood pressure/blindness/kidney failure/amputation/ circulatory [1]				8
						Total	**45**

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