OCR
RECOGNISING ACHIEVEMENT

GCSE

BIOLOGY B

F **B632/01**

Biology B Unit 2 Modules B4, B5, B6

Specimen Paper

60 mins

Candidates answer on the question paper:
Additional materials: ruler (cm/mm), calculator

Candidate Name	

Centre Number						Candidate Number				

TIME 60 mins

INSTRUCTIONS TO CANDIDATES

- Write your name, centre number and candidate number in the boxes above.
- Answer **all** the questions.
- Write your answers on the dotted lines unless the question says otherwise.
- Use blue or black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure you know what you have to do before starting your answer.
- There is a space after most questions. Use it to do your working. In many questions marks will be given for a correct method even if the answer is incorrect.
- Do not write in the bar code. Do not write in the grey area between the pages.
- DO NOT WRITE IN THE AREA OUTSIDE THE BOX BORDERING EACH PAGE. ANY WRITING IN THIS AREA WILL NOT BE MARKED.

INFORMATION FOR CANDIDATES

- The number of marks is given in brackets [ ] at the end of each question or part question.
- The total number of marks for this paper is **60.**

This specimen paper consists of 26 printed pages.

 Registered Charity Number: 1066969

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Answer all questions.

Section 1

1. Mr. Jones has a hedge of conifer trees. The trees grow quickly.

(a) When it rains, puddles of water form on Mr. Jones' garden.

Mr. Jones notices that there are no cracks in the soil near to the trees.

He also notices that the puddles near to the trees are always in shadow.

The puddles near to the trees disappear faster than the other puddles.

Suggest why.

.....

.....

.....[2]

(b) The table shows some information about the trees.

It also shows some information about the conditions in the garden.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average day temperature in °C	-1	3	5	8	11	16	14	15	13	10	7	4
Average hours of daylight per day	6	8	10	12	13	15	14	12	10	9	8	6
Growth rate of trees in cm per month	0	0	0	4	17	32	25	14	5	3	1	0

Look at the table.

(i) During which month did the trees grow fastest?

.....[1]

(ii) Suggest **two reasons** why the trees grow fastest in this month.

Use information from the table to help you to answer.

1 .....

.....

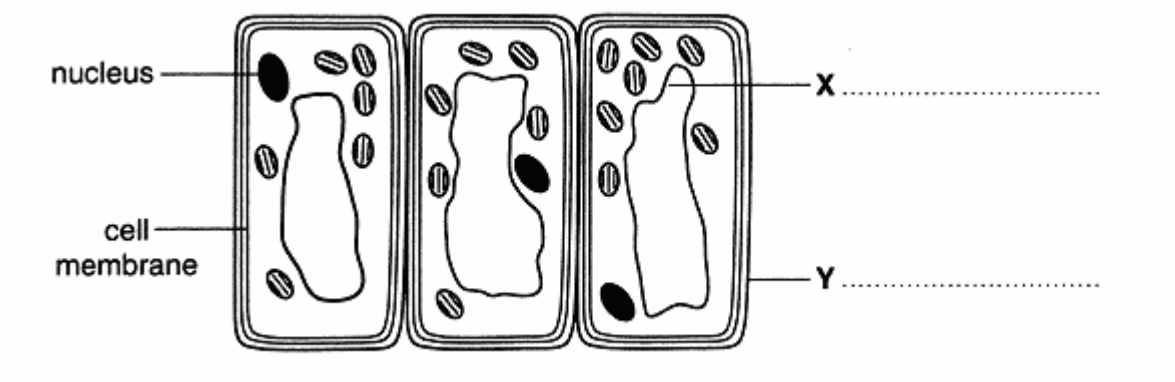
2 .....

.....[2]

[Total: 5]

2. This question is about plant cells.

The diagram shows some cells from inside a green leaf of a tree.



(a) **(i)** Complete the labels X and Y on the diagram. [2]

(ii) Write down the job of part Y

.....[1]

(b) These leaf cells also contain chloroplasts.

What is the job of chloroplasts?

.....[2]

[Total: 5]

3. This question is about decay.

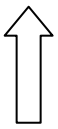
When dead plant material decays it makes gases.

One of the gases is methane.

The methane can be collected using a methane generator.

Methane can be used as a fuel.

Methane



Decaying plant material

(a) Look at the list of plant materials.

dry straw

coconut shells

grass cuttings

tree bark

wooden branches

(i) Chris wants to make methane more quickly.

Which material would be best to use in the methane generator?

Choose your answer from the list.

.....[1]

(ii) Explain your answer.

.....

.....[1]

(b) There are living things in the methane generator.

These organisms make the plant material decay.

What kind of living things makes the plant material decay?

.....[1]

(c) The methane generator is not making much methane.

Suggest **two** things Chris could do to the generator to make more methane.

Explain your answers.

1 What Chris could do .....

Explanation.....[1]

2.What Chris could do .....

Explanation.....[1]

[Total: 5]

4. This question is about Intensive Farming.

(a) **(i)** Look at the list of chemicals.

bactericide

fungicide

herbicide

insecticide

pesticide

What type of chemical would farmers use to kill weeds?
Choose your answer from the list.

.....[1]

(ii) Using chemicals to kill weeds and animal pests can cause harm to other living things.
Explain how.

.....

.....

.....

.....[2]

(b) Some farmers do not use manufactured chemicals to kill weeds.

(i) What is the name of the type of farming that does not use manufactured chemicals?

.....[1]

(ii) Describe one technique this type of farmer could use to stop weeds.

.....[1]

[Total: 5]

Section 2

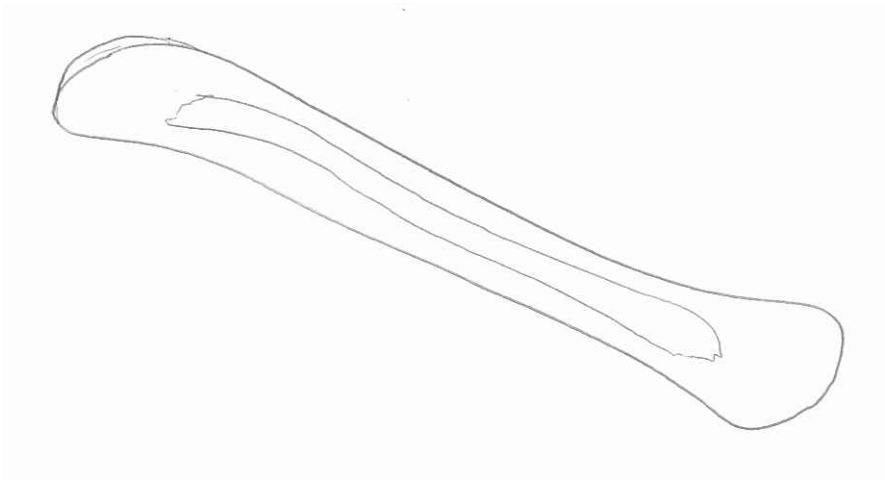
5. (a) Label the diagram which shows the structure of a long bone.

Use words from this list.

cartilage

bone marrow

shaft



[3]

(b) How could you tell, by looking at an X-ray of a bone, whether a person was still growing?

.....[1]

[Total: 4]

6. As people live longer, parts of their bodies start to wear out or go wrong. These parts can sometimes be replaced.

(a) Name one body part that can be replaced

.....

.....[1]

(b) Describe **two** problems in finding a supply of donor organs.

.....

.....[2]

[Total: 3]

7. The kidney is an organ of the body that removes waste.

(a) Name **two** other organs of the body that remove waste.

1 .....

2 .....[2]

(b) Explain how the kidneys remove **urea** from the body.

.....

.....

.....[3]

(c) Name **two** other substances excreted by the kidneys.

1 .....

2 .....[2]

[Total: 7]

8. **(a)** Draw a straight line to join each animal to its correct type of blood circulatory system.

Animal	Type of blood circulatory system
Ant	**Closed**
Amoeba	**Open**
Human	**No circulatory system**

[2]

(b) Name the blood vessel that supplies the heart with food and oxygen.

.....[2]

(c) The rate of the heart beat can be detected at the wrist. Explain how.

.....

.....[2]

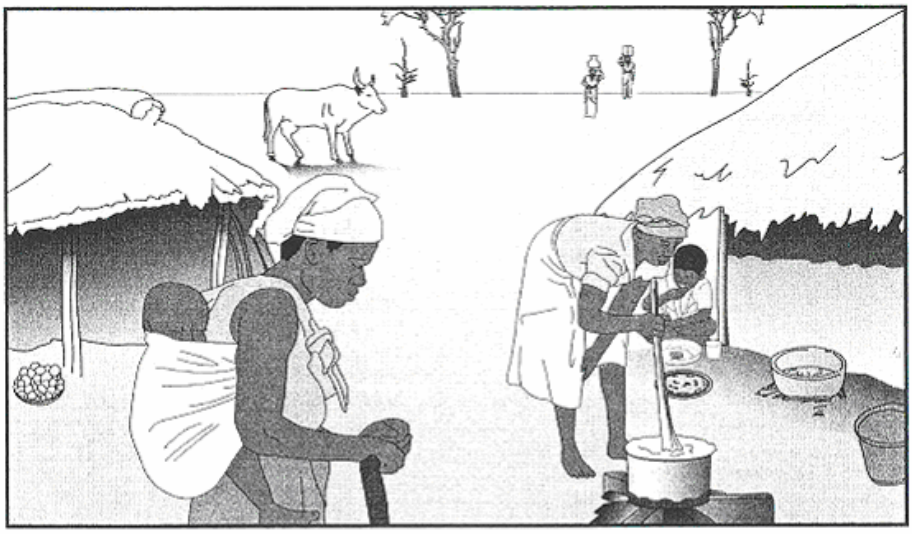
[Total: 6]

Section 3

9. Sacha lives in a small, remote village in Africa.

Her family is very large and they all live in a small hut.

The village has no electricity or clean water supply.



(a) Disease can spread rapidly through the village.

This can be caused by a lack of clean water.

Explain how.

.....

.....

.....

.....[2]

(b) Sacha's family keep cows to supply milk.

The milk goes bad quickly.

What causes milk to go bad?

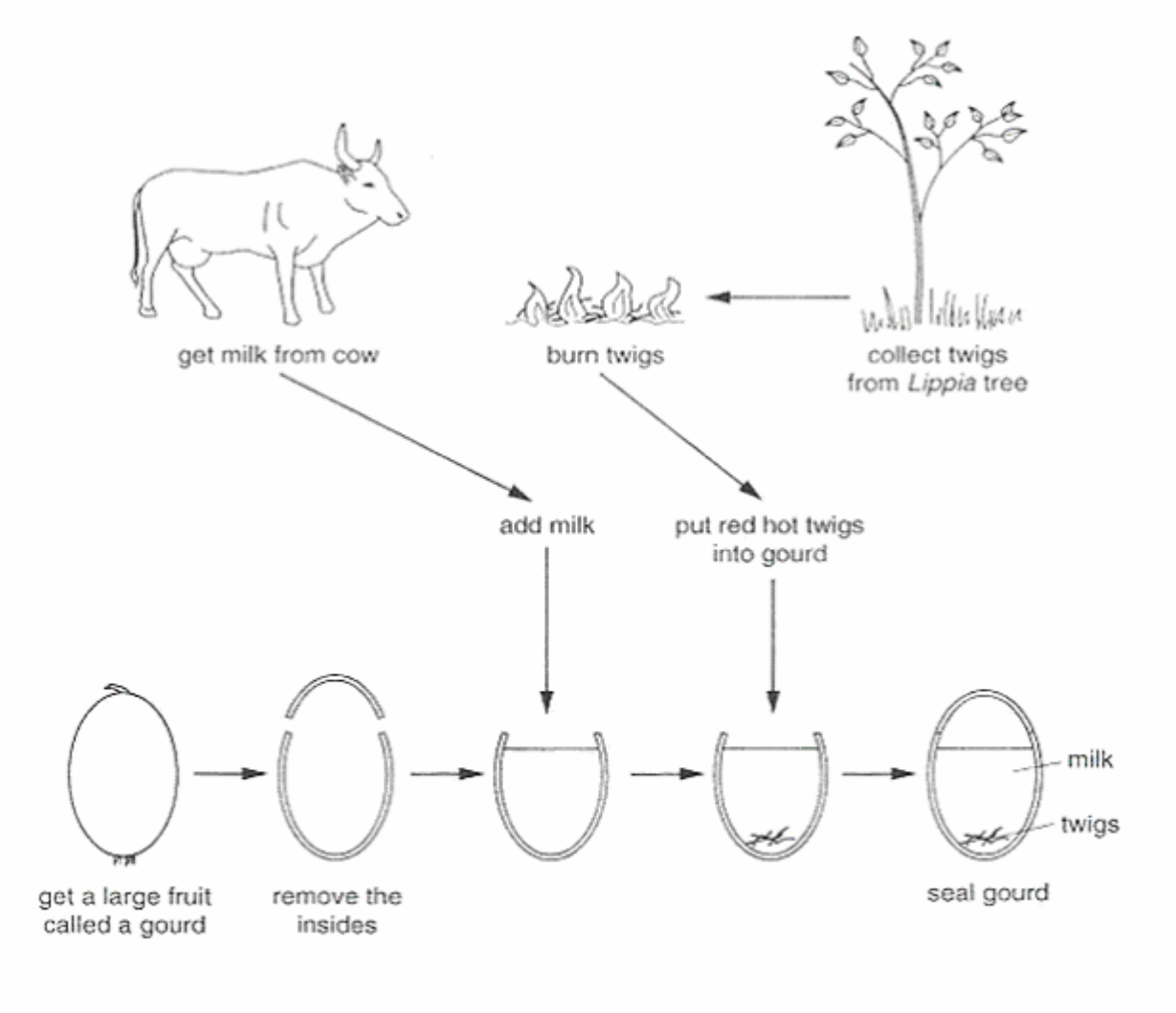
Draw a (ring) around the correct answer.

Choose from this list.

bacteria
boiling it
freezing it
viruses

[1]

(c) The villagers use a special method to keep the milk from going bad.



(i) The milk does not go bad for a few days.

Suggest an explanation.

.....

.....[2]

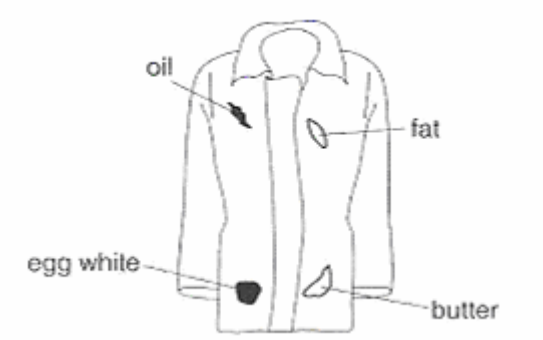
(ii) Suggest one reason why this method is not used in African cities.

.....

.....[1]

.....[Total: 6]

10. After a party, Ron finds some food stains on his shirt.



His mum suggests that he should use a biological washing powder to remove the stains.

Ron looks at the contents list on a packet of biological washing powder.

CONTENTS
Sodium carbonate to soften water 15%
Soap 45%
Perfume 7%
Protease enzymes 5%
Antifoam agent 9%
Brightening compounds 10%
Oxidising agents 9%

(a) Enzymes are only 5% of the total contents.

This is very low concentration.

Explain why.

.....

.....[1]

(b) The instructions on the packet state. 'Wash at 40 ^{o}C.'

Ron thinks this temperature is too low and washes his shirt at 70 ^{o}C.

Explain why he is wrong.

.....

.....[1]

(c) **(i)** There are four different stains on Ron's shirt.

Which one will be removed by this washing powder?

.....[1]

(ii) Explain your answer

.....

.....

.....[3]

[Total: 6]

11. Hydrogen peroxide is poisonous to cells.

Cells use an enzyme called catalase to break down hydrogen peroxide into water and oxygen.

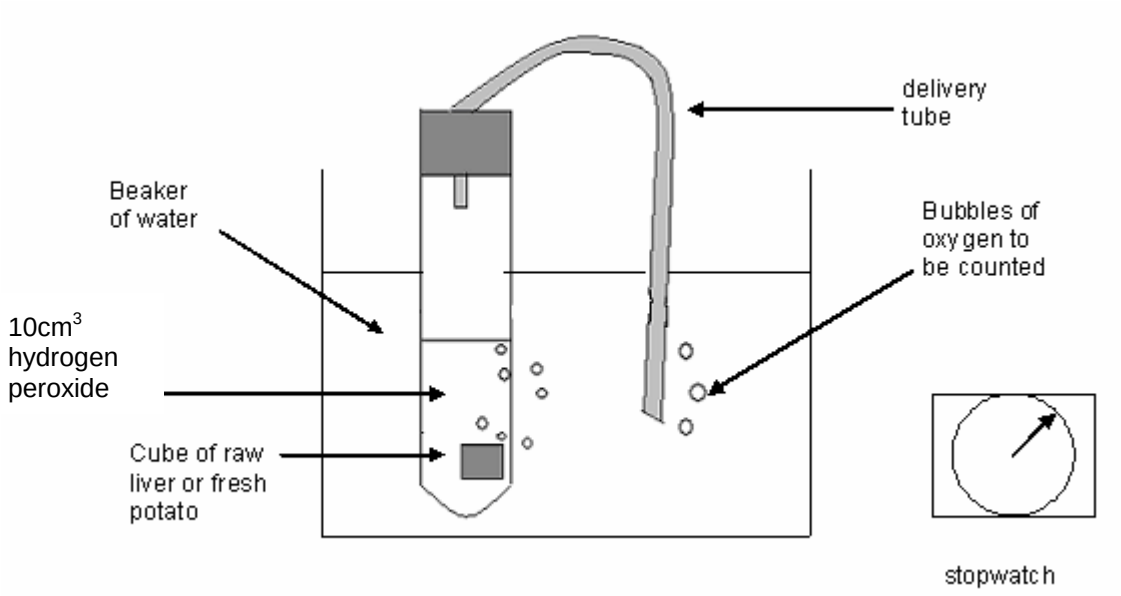
The word equation shows this reaction.

$$\text{Hydrogen peroxide} \xrightarrow{\text{catalase}} \text{water + oxygen}$$

Produced by living cells

Small cubes of raw liver or fresh potato were used to investigate this reaction.

The diagram shows the apparatus which was used for the investigation.



Chris cut a small cube of liver.

He dropped it into a test tube containing $10cm^3$ of hydrogen peroxide.

He placed a bung with a delivery tube in the mouth of the test tube and started the stopwatch.

He recorded the number of bubbles produced each minute for 8 minutes.

Here are Chris's results using a cube of liver.

Time in minutes	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Bubbles per minute	59	46	40	34	28	22	18	16

Kara repeated the experiment using a similar sized cube of potato.

She used 10 cm^3 of fresh hydrogen peroxide.

Here are Kara's results using a cube of potato.

Time in minutes	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Bubbles per minute	34	30	24	20	18	15	12	10

The liver produced a total of 263 bubbles of oxygen in 8 minutes.

(a) **(i)** How many bubbles of oxygen did the potato produce in 8 minutes?

..... bubbles [1]

(ii) Suggest a reason why the liver gave off more oxygen that the potato.

.....[1]

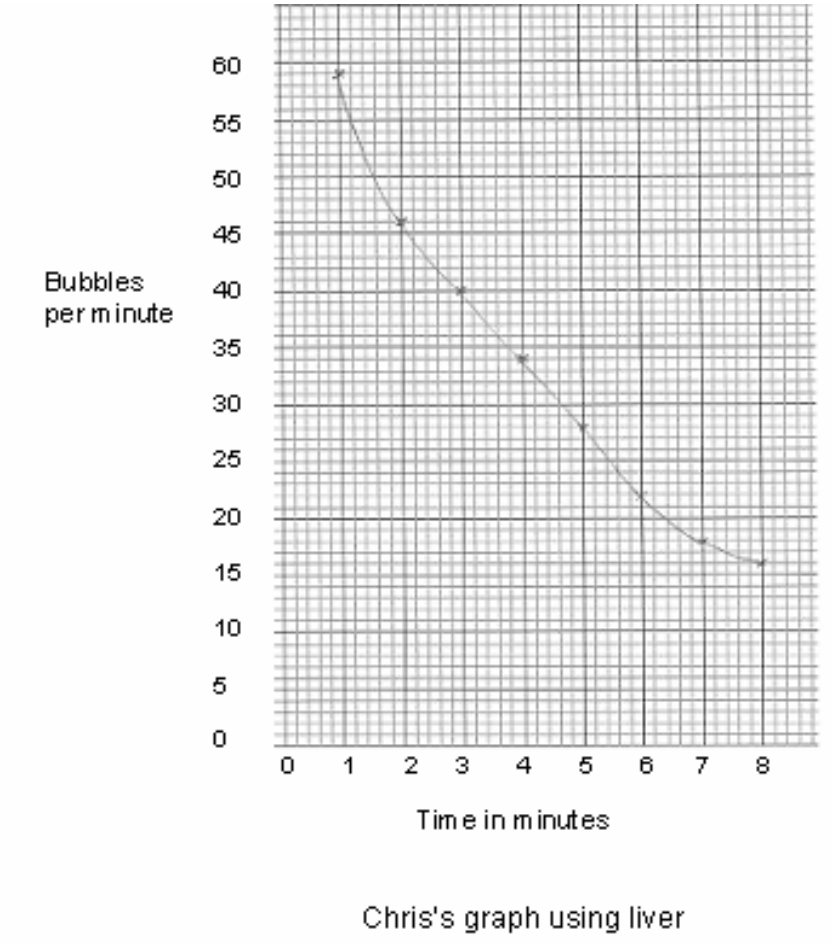
(iii) It was important to use the same sized cubes of liver and potato for this experiment. Explain why.

.....

.....[1]

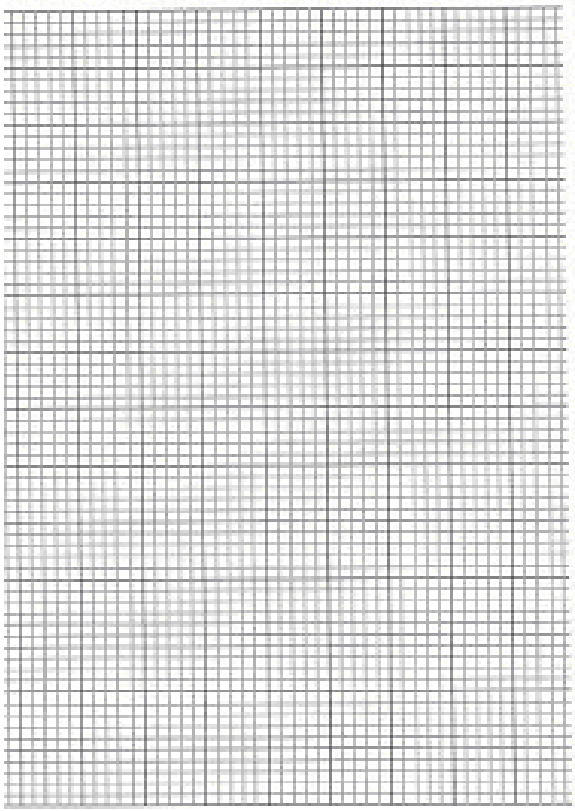
(b) Chris and Kara used the results of their experiments to make graphs.

Chris's graph for the cube of liver is shown below.



Chris's graph using liver

Use Kara's results to plot a graph for the cube of potato on the blank grid.



Kara's graph using potato

[3]

[Total: 6]

12. Plants rely on soil for water. What else do plants get from soil?

Put a ring around the right answer.

light **food** **minerals**

[1]

(b) Name three types of living things found in soil.

1 .....

2 .....

3 .....[3]

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GCSE

BIOLOGY B

Biology B Unit 2 Modules B4, B5, B6

Specimen Mark Scheme

Maximum mark for this paper is 60

F **B632/01**

60 mins

This specimen mark scheme consists of 4 printed pages.

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Question Number	Answer	Max Mark
Section 1		
1(a)	Water taken in by tree; Through roots / root hairs / lost by evaporation / transpiration;	
1(b)i	June;	**[2]**
1(b)ii	1. warmest month;	**[1]**
	2. most light each day;	**[2]**
	Total marks	**[5]**
2(a)i	X: (sap) vacuole, Y cell wall	**[2]**
2(a)ii	Provides support;	**[1]**
2(b)	Absorb light energy; for photosynthesis WTTF	**[2]**
	Total marks	**[5]**
3(a)i	Grass cuttings;	
3(a)ii	Contain most water for microbe activity;	
3(b)	Microorganisms / named type;	
3(c)	Increase temperature → increase micriobe activity/ growth;	
	Add water → needed for microbe activity;	**[1]**
	Agitate contents → increase contact between microbes + plant material;	**[1]**
	Allow other valid explained answers, including mixing air to supply oxygen, as specification does not require understanding of anaerobic decay.	**[1]**
	Total marks	**[2]** **[5]**
4(a)i	Herbicide;	**[1]**
4(a)ii	Herbicides/pesticides/insecticides can enter/accumulate in food chains; Poisoning organisms that are not pests;	
	Damaging food webs / ecological balance;	**[2]**
4(b)i	Organic;	**[1]**
4(b)ii	Hand weeding/mulching/hoeing/cultivating;	**[1]**
	Total marks	**[5]**
Section 2		
5(a)	Diagram correctly labelled cartilage; Bone marrow; shaft;	**[3]**
5(b)	Amount of cartilage present	**[1]**
	Total marks	**[4]**

6(a)	Any suitable part named e.g. heart, hip joint, kidney	**[1]**
6(b)	Any **two** from Shortage of donor; Tissue match; Size of organ; Age of donor organ. (accept any correctly related suggestion)	**[2]**
	Total marks	**[3]**
7(a)	skin/lungs/liver	**[2]**
7(b)	Any **three** from: Blood filtered; High pressure; Urea removed from blood; Urine produced; Correct use of water/urethra; Urine stored in bladder;	**[3]**
7(c)	Water;salt	**[2]**
	Total marks	**[7]**
8(a)	Ant to open Amoeba to no Human to closed	
8(b)	Coronary, artery;	**[2]**
8(c)	Any two from: Muscle contraction; blood under pressure; detected where artery is close to skin surface	**[2]** **[2]**
	Total marks	**[6]**
Section 3		
9(a)	Any two from: harmful organisms in water enter body through mouth; drinking water; through skin; cuts; harmful organisms transferred back to water;	**[2]**
9(b)	Bacteria	**[1]**
9(c)i	Heating destroys some bacteria/pasteurisation, sealing prevents more bacteria entering	**[2]**
9(c)ii	Lack of suitable trees	**[1]**
	Total marks	**[6]**
10(a)	Enzymes not destroyed/work at low concentrations	**[1]**
10(b)	heat destroys/denatures enzymes	**[1]**
10(c)i	Egg white	**[1]**
10(c)ii	Only protein	**[1]**
	Total marks	**[4]**

11(a)i	163 bubbles	**[1]**
11(a)ii	Any one from: Liver contains more enzyme/catalase than potato (or vice versa i.e potato has less); Surface area of liver larger that potato i.e cubes not exactly the same size/shape; Kara's equipment has a leak/some gas escapes; Catalase in liver is more efficient than catalase in potato; Optimum temp/pH of potato and liver catalase is different (conditions favour liver);	**[1]**
11(a)iii	Fair test idea/make a valid comparison/idea of a controlled variable;	**[1]**
11(b)	1 mark for labelled axes and correct scales 1 mark for plots 1 mark for line of best fit (smooth curve)	
	Total marks	**[3]**
12(a)	Minerals	**[1]**
12(b)	Any three from fungi; protozoan; nematode worm; earth worm; insect; snail; slug; bacteria;	**[3]**
	Total marks	**[4]**
	Overall marks	**[60]**