

GCSE

BIOLOGY B

Biology B Unit 2 Modules B4, B5, B6

Specimen Paper

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

H **B632/02**

60 mins

Candidate
Name

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Centre
Number

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Candidate
Number

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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**.

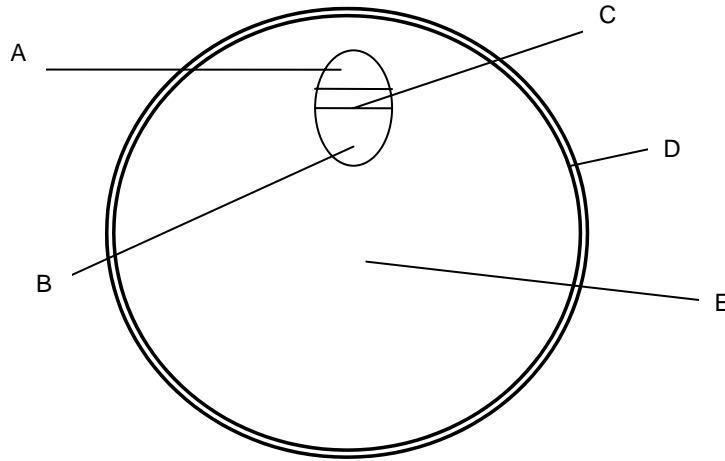
This specimen paper consists of 23 printed pages.

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Answer all questions.

Section 1

1. The diagram shows a cross section through a plant stem.



(a) (i) Which label letter shows the xylem?

Choose from **A, B, C, D,** or **E.**

.....[1]

(ii) Which label letter shows the phloem?

Choose from **A, B, C, D,** or **E.**

.....[1]

(b) Water travels through the plant by a process called transpiration.

Give **two** uses of water in a plant.

1

2[2]

(ii) Describe how does a plant lose water from its leaves?

.....
.....
.....
.....[2]

(c) Rob noticed that his tomato plants wilted on a hot and windy day.

His friend said this was due to increased transpiration.

Explain why transpiration rate is increased on hot and windy days.

.....
.....
.....
.....[3]

(d) The table shows how plants use some elements they obtain from soil minerals.

Complete the table. One example has been done for you.

Mineral	One substance made using the mineral
phosphorus	DNA
magnesium	
nitrogen	

[2]

[Total: 4]

2. Woolly mammoths were a type of prehistoric elephant.

They used to live in very cold parts of the world.

They became extinct about 10,000 years ago.

The dead bodies of some mammoths have been found preserved in frozen ground.

Some of the mammoths have been taken out of the frozen ground.

The bodies then started to decay.

Explain why they started to decay.

.....

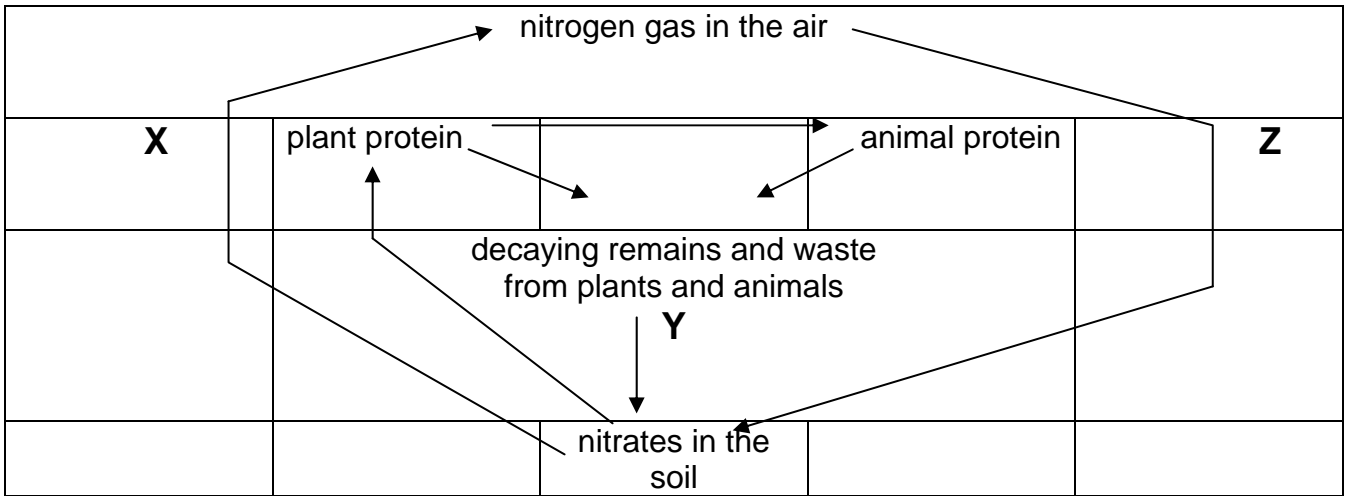
.....

.....

.....[3]

[Total: 3]

3. The diagram shows part of the nitrogen cycle.



(a) What types of microbes cause the changes shown by arrows **X**, **Y** and **Z**?

X

Y

Z[3]

(b) In tropical rainforests, there is a lot of decaying plant and animal material.

However, the amount of nitrate in the soil is low.

Suggest why the amount of nitrate in the soil is low.

.....

.....[1]

(c) Nitrates are taken up into root hair cells by **active transport**.

Explain the term **active transport**.

.....

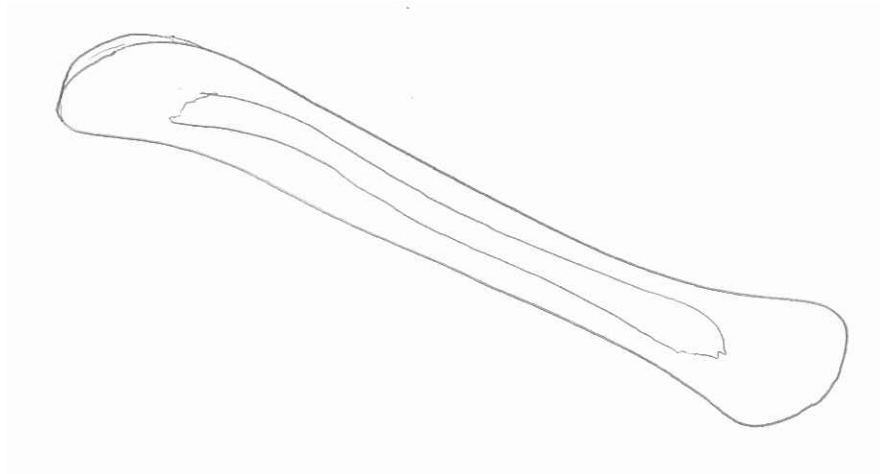
.....[2]

[Total: 6]

Section 2

4. (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]

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

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

.....
.....
.....[2]

(b) Not all organ donations are successful.
Explain why.

.....
.....
.....[2]

[Total: 4]

6. (a) Urea is a waste product produced in our body. It is toxic and we have to remove it.

(i) Where in the body is urea produced?

.....[1]

(ii) Explain how the kidneys remove urea from the body.

.....
.....
.....[3]

(b) Write about how the hormone ADH controls the concentration of urine.

Include in your answer

- the parts of the kidney affected by ADH
- the changes caused by ADH

.....
.....
.....
.....
.....
.....[4]

[Total: 8]

7. (a) Describe the following parts of the blood and explain how their structure makes them suitable for their function.

(i) red blood cells
.....
.....[2]

(ii) platelets
.....
.....[2]

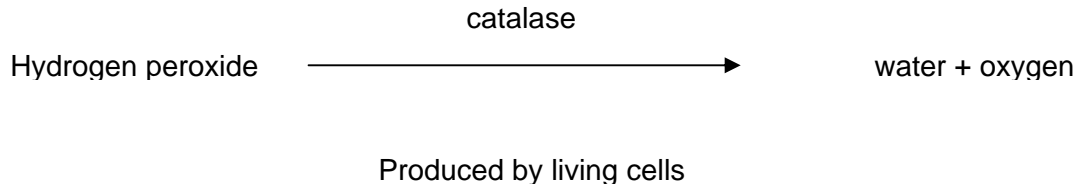
[Total: 4]

Section 3

8. Hydrogen peroxide is poisonous to cells.

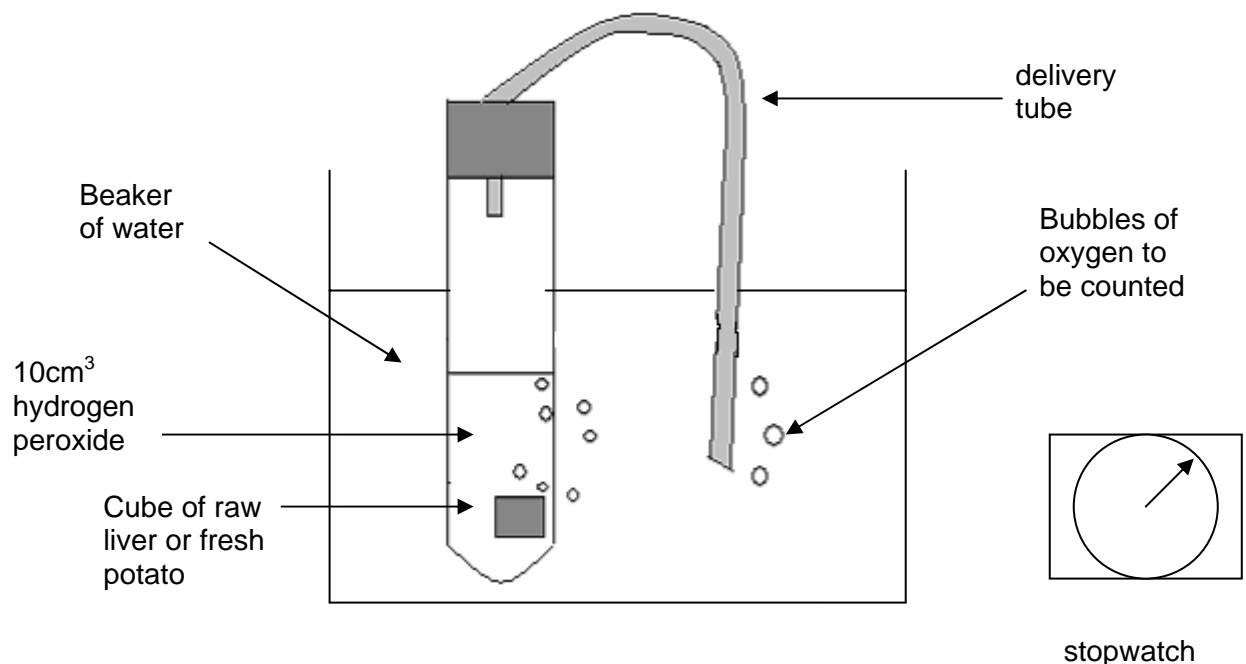
Cells use an enzyme called catalase to break down hydrogen peroxide into water and oxygen.

The word equation shows this reaction.



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 10cm³ of hydrogen peroxide.

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

Chris counted the oxygen bubbles as they came out of the delivery tube.

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 10cm³ 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	5	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]

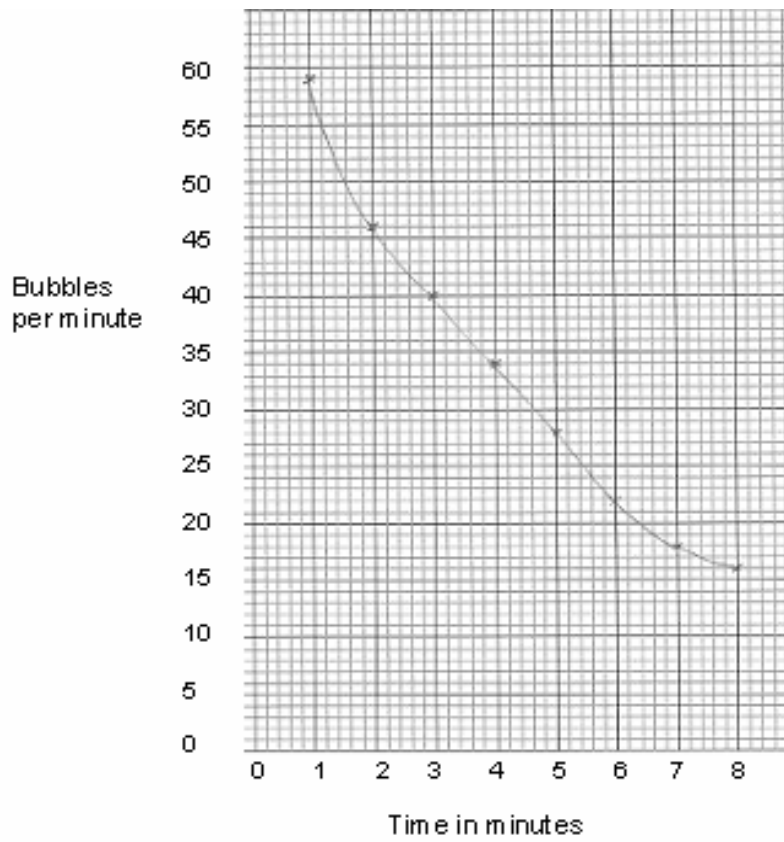
- (ii) Suggest a reason why the liver gave off more oxygen than the potato.

.....

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

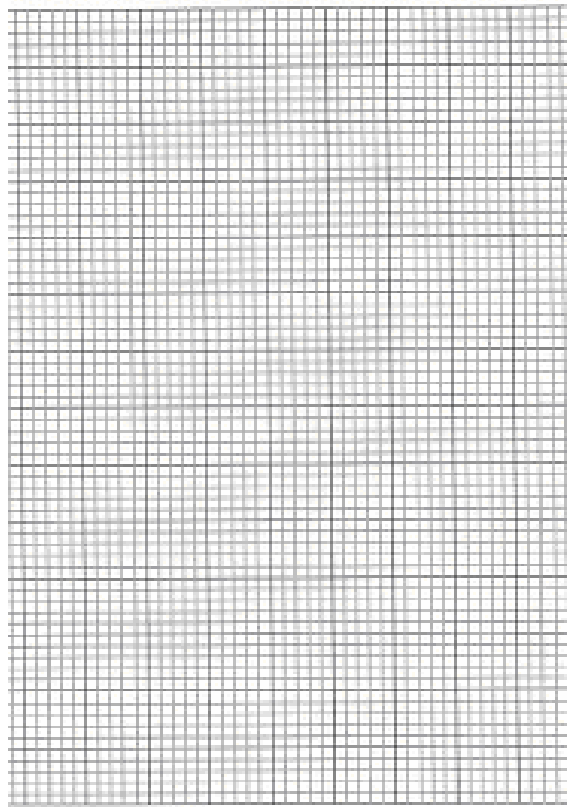
.....[1]

- (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.

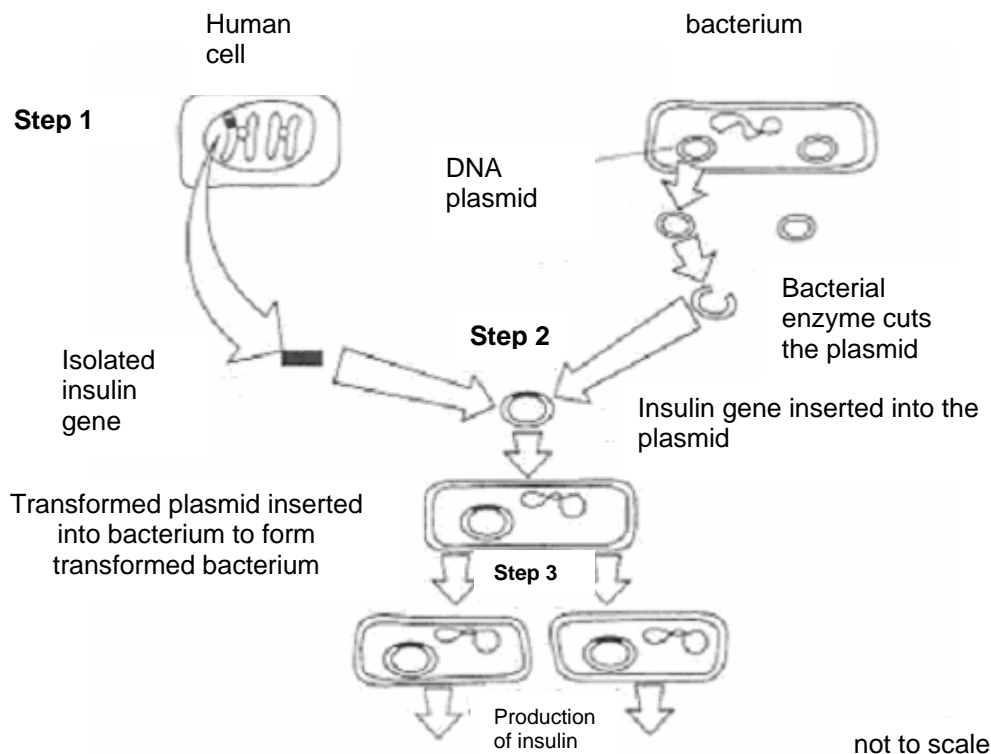


Kara's graph using potato

[3]

[Total: 6]

9. Diabetes is a disorder in which the body cannot control its blood glucose level. Some diabetics need frequent injections of insulin. Genetic engineering is now used to make human insulin. The diagram outlines the process.



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

- (a) Describe how the required gene is obtained (step 1).

.....

[2]

- (b) How is the isolated gene inserted into the bacterial DNA (step 2)?

.....

[2]

(c) What name is given to this new DNA?

.....[1]

(d) How are many identical copies of the human gene produced (step 3)?

.....[1]

[Total: 6]

10. Yoghurt can be made using cow's milk.

(a) Before the milk can be contaminated with antibiotics.

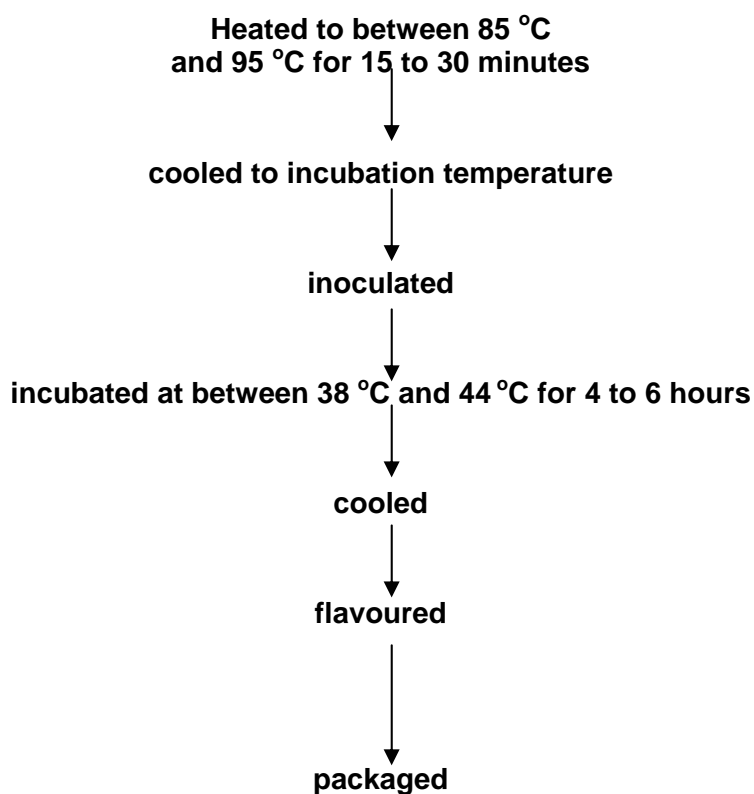
(i) Suggest how milk can be contaminated with antibiotics.

.....
.....[1]

(ii) How will the antibiotics affect the production of yoghurt?

.....[1]

(b) The stages in making yoghurt from milk are shown in the flow diagram.



The milk is inoculated with *Lactobacillus bulgaricus* and *Streptococcus thermophilus*.

(i) What type of micro-organism are these?

.....[1]

(ii) Each micro-organism has two names.
What is the system of naming organisms called?

.....[1]

(iii) Why is the milk heated to between 85 °C and 95 °C at the beginning?

.....[1]

(iv) Why is the milk cooled before inoculation?

.....
.....[1]

(c) The equipment for making yoghurt is sterilised before being used.
Suggest why.

.....
.....[1]

(ii) Suggest how the equipment can be sterilised.

.....
.....[1]

[Total: 8]

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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

H **B632/02**

60 mins

This specimen mark scheme consists of 4 printed pages.

Question Number	Answer	Max Mark
Section 1 1(a)i 1(a)ii 1(b)i 1(b)ii 1(c) 1(d)	B; A; Cooling; photosynthesis; support; movement of minerals (any two) Diffusion; through stomata; Windy blows molecules/water molecules away; water molecules evaporate from left; higher temperature gives water molecules greater energy/kinetic energy; water molecules evaporate more quickly WTTT (any three) Magnesium-chlorophyll; Nitrogen- protein/amino acid/nucleic acid; <p style="text-align: right;">Total marks</p>	 [1] [1] [2] [2] [3] [2] [4]
2	Micro organisms cause decay; Micro organisms become more active/reproduce faster due to higher temperature; Ice melts to make water available to micro organisms; <p style="text-align: right;">Total marks</p>	 [3] [3]
3(a) 3(b) 3(c)	X = denitrifying bacteria; Y = nitrifying bacteria; Z = nitrogen fixing bacteria; Small amounts of nitrifying bacteria in the soil; Against, concentration gradient; <p style="text-align: right;">Total marks</p>	 [3] [1] [2] [6]

