

**GCSE**

**BIOLOGY B**

Biology B Unit 1 Modules B1, B2, B3

**Specimen Paper**

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

**F** **B631/01**

60 mins

Candidate  
Name

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Centre  
Number

--	--	--	--	--

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**.

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**This specimen paper consists of 33 printed pages.**

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**Answer all questions.**

**Section 1**

1. Roy goes to basketball training.

He finds that many changes take place inside his body.

Pulse rate  
.....

Breathes more  
deeply



Microsoft ©

Breathing rate  
increases

Produces sweat

(a) Complete the box to show what happens to his pulse rate. [1]

(b) Roy's breathing rate increases during the training session. Explain why.

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

(c) Give **two** ways in which the air Roy breathes in is different from the air he breathes out.

1 .....  
.....  
2 .....  
.....[2]

**(d)** When Roy exercises very hard his muscle cells convert glucose into lactic acid, releasing a small amount of energy.

**(i)** What type of respiration is happening?

.....[1]

**(ii)** Why does this type of respiration only happen when Roy is exercising hard?

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

[Total: 7]

2. Evie smokes cigarettes.

(a) She finds out that cigarette smoke contains these substances

**carbon monoxide**

**nicotine**

**particulates**

**tar**

(i) Which of these substances makes Evie addicted to smoking?

.....[1]

(ii) Explain what **addicted** means.

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

(b) The tobacco in cigarettes acts as a drug.

Which type of drug is found in tobacco?

Draw a ring round the correct answer.

**Depressant**

**Hallucinogen**

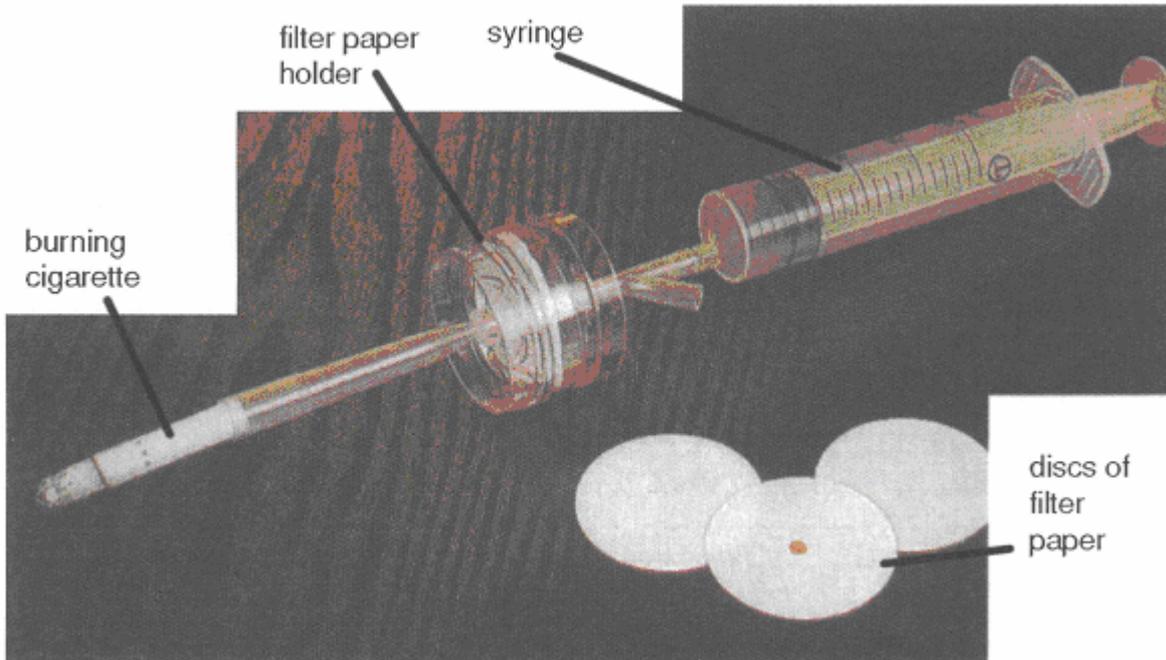
**Pain killer**

**Performance enhancer**

**Stimulant**

[1]

- (c) Cigarette packets show information about the tar content and whether they have a filter. Evie sets up a “smoking machine”



Philip Harris Education ©

- (i) Name the chemical that will cause the marks on the filter paper.

.....[1]

- (ii) She uses the “smoking machine” to compare different types of cigarettes.

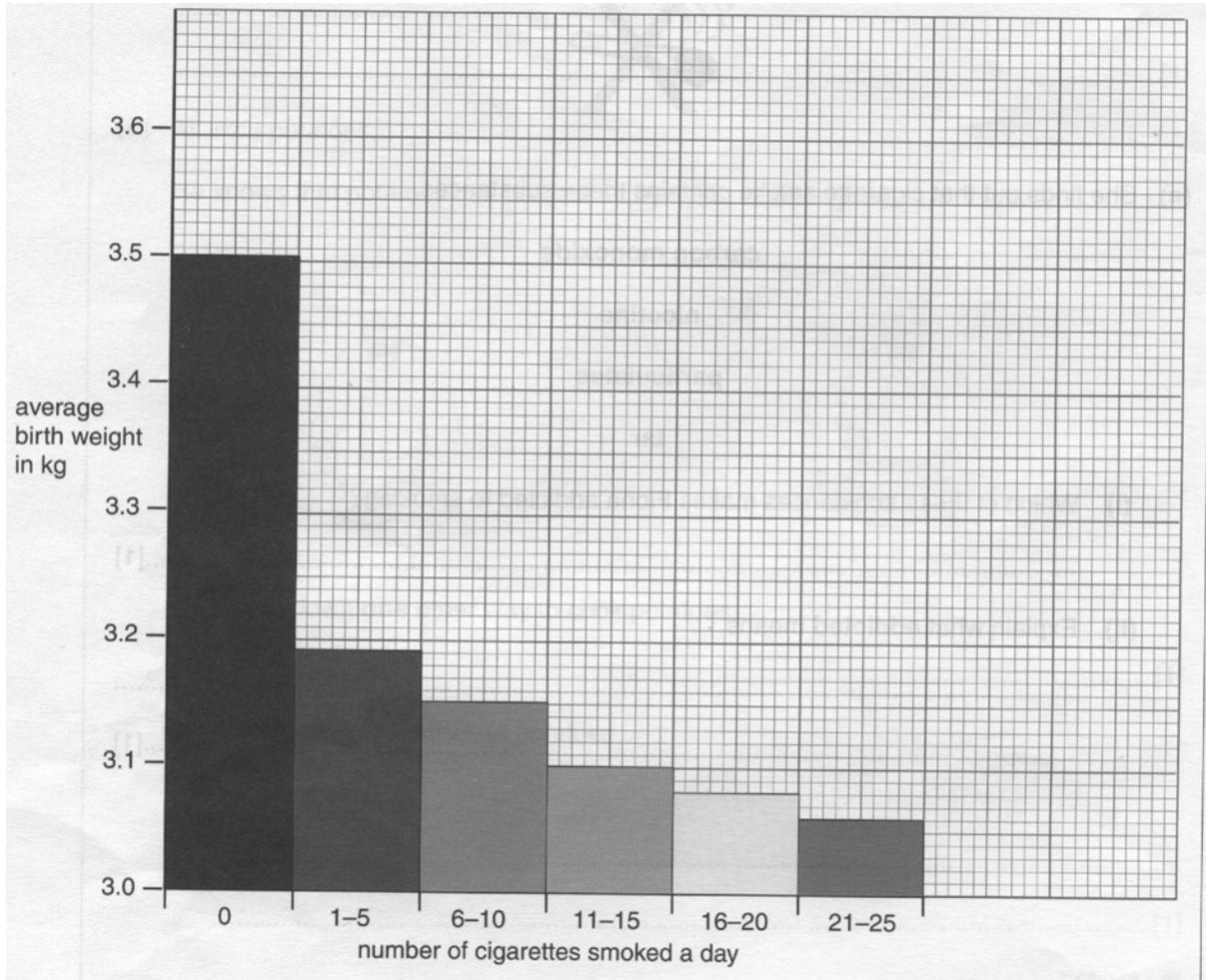
Type	Description
A	low tar cigarette with a filter
B	low tar cigarette without a filter
C	high tar cigarette with a filter
D	high tar cigarette without a filter

Which type of cigarette **A**, **B**, **C** or **D** will produce the **darkest** colour on the filter paper?

Type .....[1]

(d) Evie is pregnant.

She finds this information about cigarette smoking and birth weight.



(i) Evie smokes 13 cigarettes a day.

Use the information from the graph to predict her baby's birth weight.

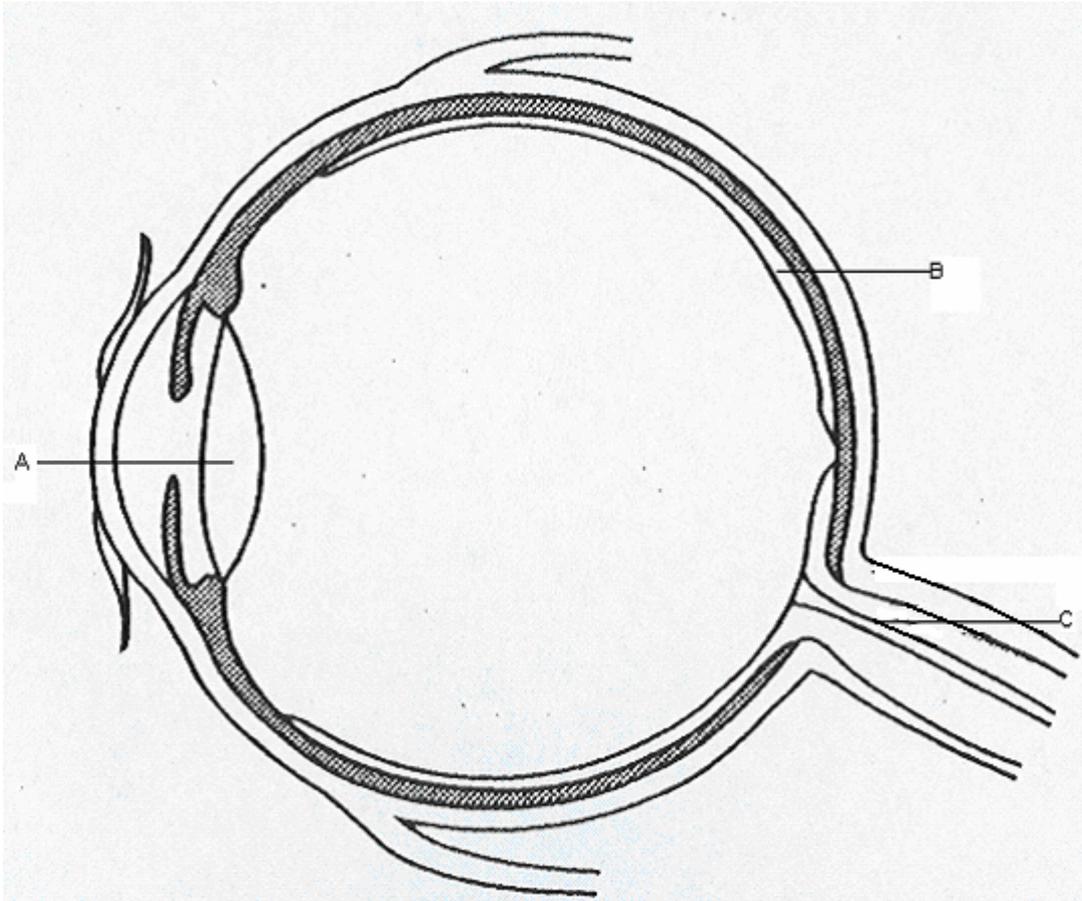
Predicted baby's birth weight .....[1]

(ii) What link is shown between cigarette smoking and birth weight?

.....[1]

[Total: 7]

3. Look at the diagram of the structure of the eye.

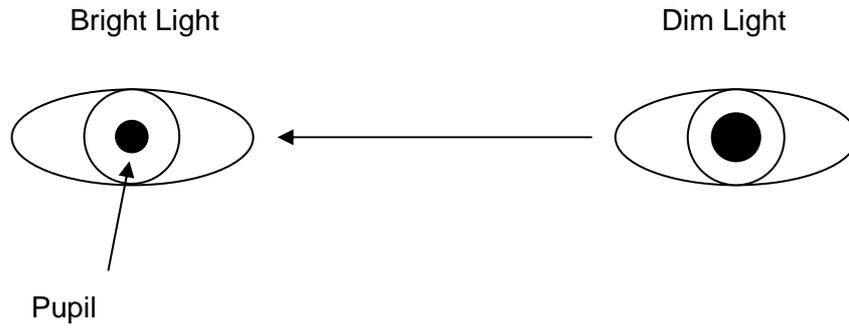


(a) Draw a line from each **part of the eye** to the correct **label** and to its correct **job**.  
One set of lines has been drawn for you.

label	part of the eye	job
A	optic nerve	react to light
B	lens	carry nerve impulses
C	retina	focus light rays

[2]

**(b)** The eye can adjust to different light conditions.



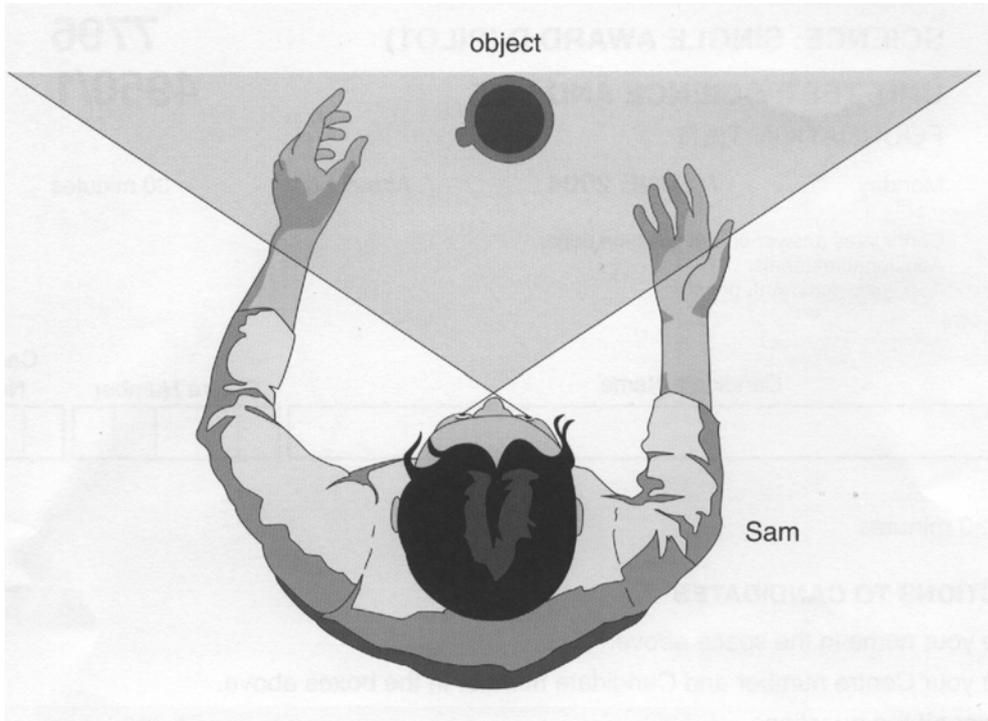
**(i)** Explain why it is important for the eye to adjust to bright light.

.....[2]

**(ii)** What name is given to this type of quick reaction?

.....[1]

- (c) The diagram shows a view of Sam's head seen from above. Anything in the shaded area is seen by both of his eyes at the same time.



Finish the sentence about Sam's vision.

Choose from these words.

**binocular      long      monocular      short**

When Sam uses both his eyes to see an object he is using

..... vision. [1]

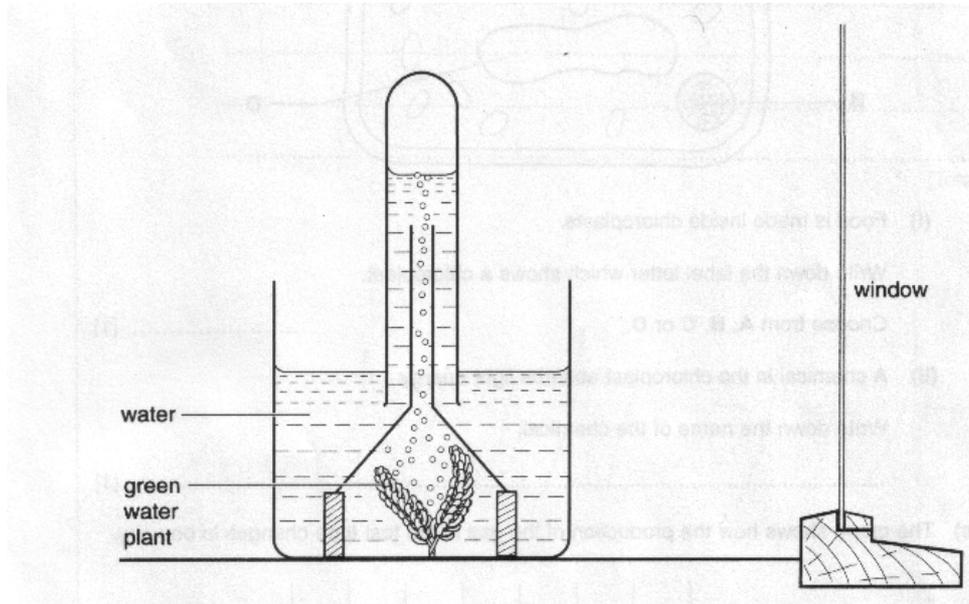
[Total: 6]

**Section 2**

4. Kaysha is investigating how plants make food.

The diagram shows the apparatus that she uses.

The apparatus is near a sunny window.



(a) (i) What is the name of the process that plants use to make food?

Put a **ring** around the correct answer.

**digestion**

**photosynthesis**

**respiration**

[1]

(ii) Look at the diagram.

The plant has made a gas.

The gas is at the top of the test tube.

What is the name of the gas that is at the top of the test tube?

Put a **ring** around the correct answer.

**Carbon dioxide**

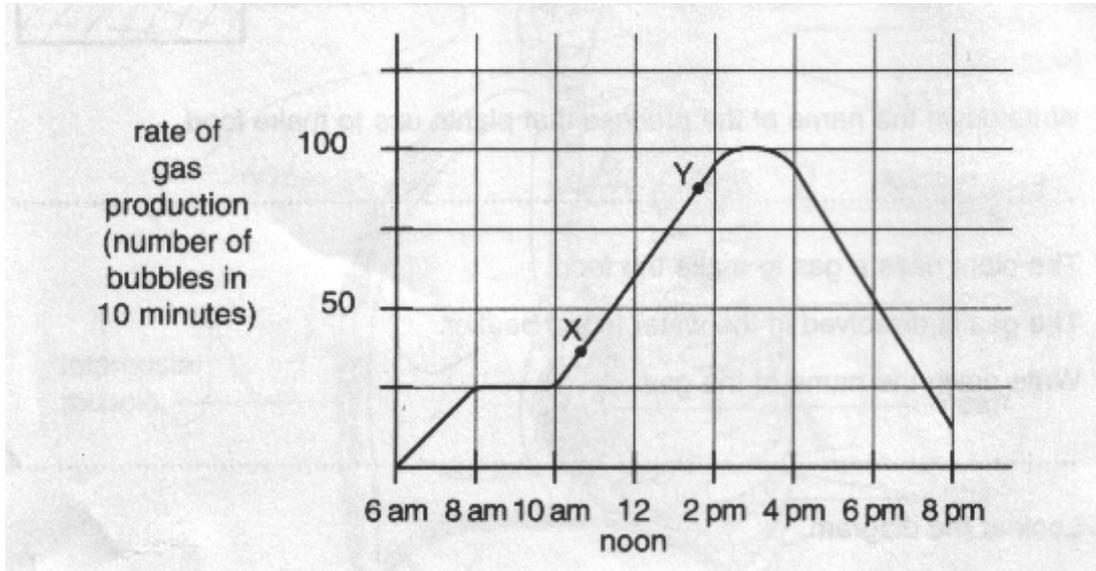
**nitrogen**

**oxygen**

(b) The apparatus is near a sunny window. How will this help the plant make food?

.....[1]

- (c) The green plant in the experiment produced a gas.  
The graph shows how the production of the gas in the test tube changes in one day.



Look at the graph.

- (i) Between what times does the rate of gas production stay the same?

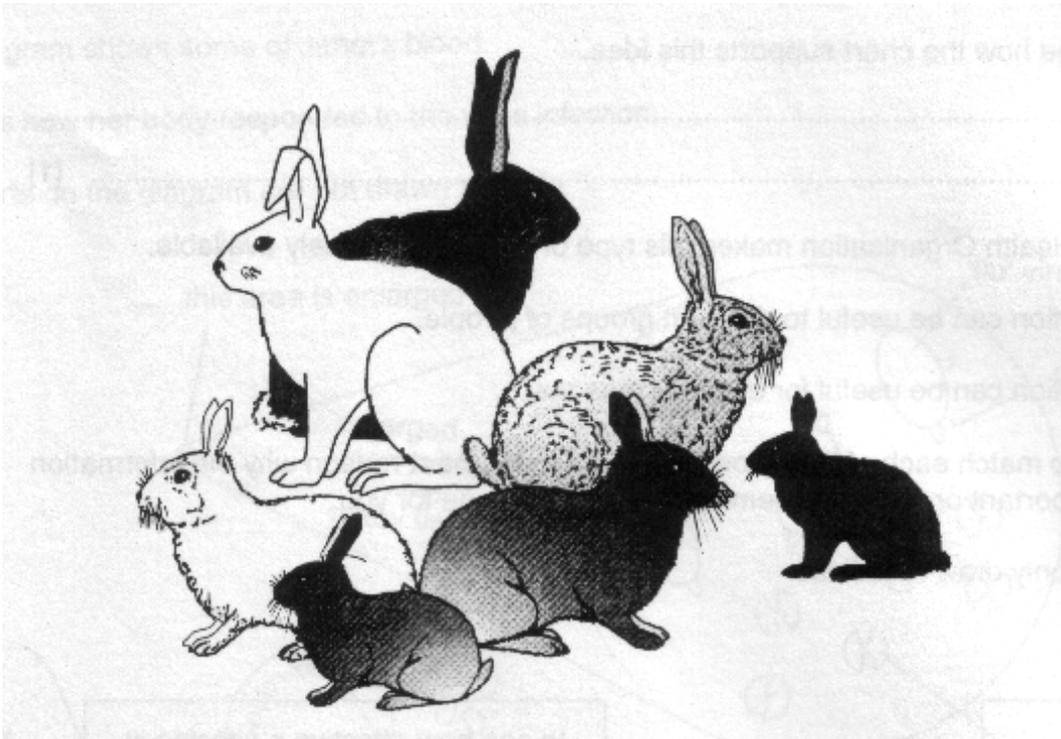
From.....to.....[1]

- (ii) The rate of gas production changes between points X and Y on the curve.  
Suggest why.

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

[Total: 5]

5. Stacey and Patrick have some pet rabbits.



(a) Look at the rabbits.

Describe **one** difference between the rabbits that you can **see** in the pictures.

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

(b) Rabbits are herbivores.

Predators hunt them for food.

Suggest how **one** of the features **you can see** could help a rabbit to survive in its natural environment.

Feature.....  
How it can help a rabbit to survive .....  
.....[1]

(c) The differences between the rabbits are called **variation**.

Write about the different **causes** of variation.

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

[Total: 4]

6. Pippa and Peter are doing a survey of the animals and plants that live in a field. The field has lots of wild plants in it.

(a) They use quadrats to survey the plants.



Write instructions to tell Pippa and Pete how to use a quadrat in their survey.



[2]

(b) Next they collect insects.

They walk through the plants dragging nets behind them.



Look at their results.

<b>type of insect</b>	<b>number found by Pippa</b>	<b>number found by Peter</b>
ladybirds	5	2
greenflies	20	8
grasshoppers	1	0
wasps	2	1
crane-flies	4	2
butterflies	3	1

Pippa and Peter get different results.

Suggest why.

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

(c) Look at the list.

It shows pieces of equipment that can be used to collect insects.

**beating tray**

**net**

**pitfall trap**

**pooter**

Some insects move around on the ground at night.

Which piece of equipment would be best to leave overnight to collect these insects?

Choose your answer from the list.

.....[1]

[Total: 4]

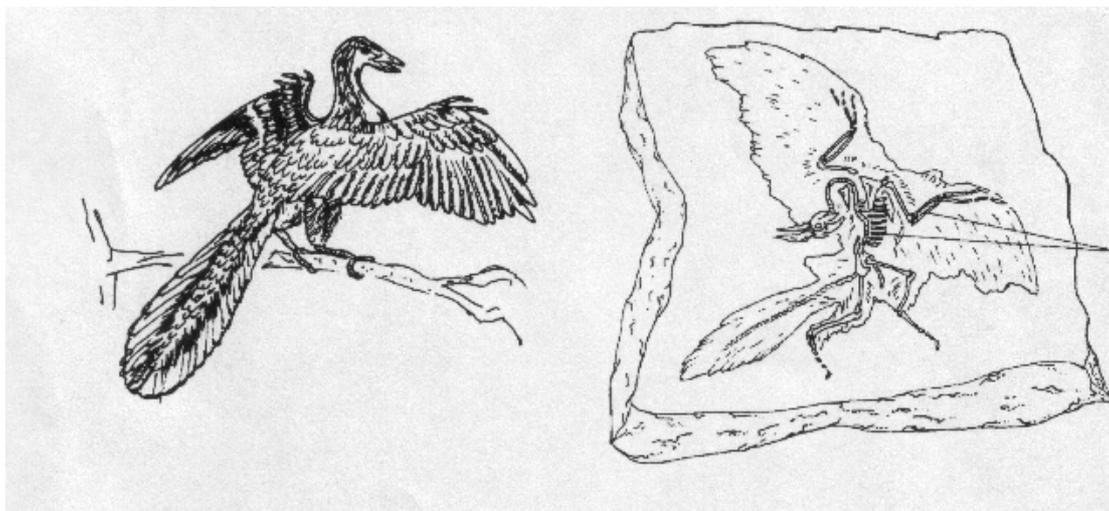
7. Picture **A** shows an animal that lived millions of years ago.

Now it is extinct.

Picture **B** shows a fossil of the animal.

**Picture A**  
(This is what the scientist think the animal looked like)

**Picture B**  
(a fossil of the animal)



The fossil was found in rock.

Look at picture **B**.

(a) (i) Some internal body parts of the animal have been fossilised.

What type of internal body parts have been fossilised?

.....[1]

(ii) Scientists think that the animal had feathers.

What evidence is there that the animal had feathers?

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

**(b)** Fossils cannot show us exactly what extinct animals looked like.

Write down **one** reason why.

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

**(c)** Scientists think that birds and reptiles evolved from the same ancestor.

The fossil is evidence that this might have happened.

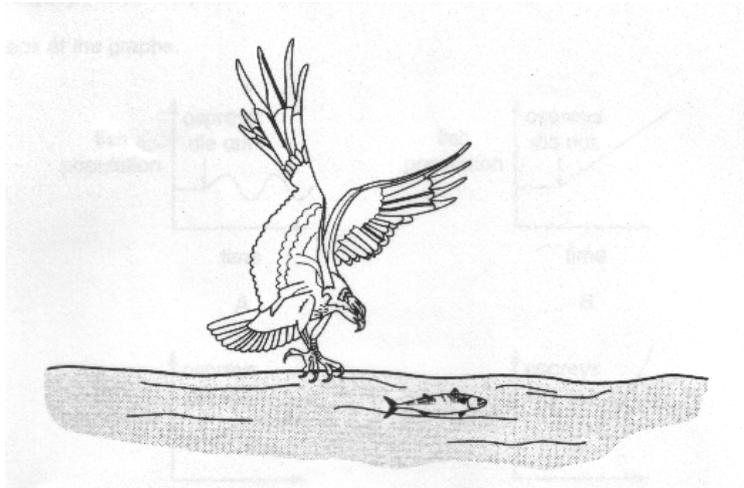
We cannot be **sure** that birds and reptiles had the same ancestor.

Write down **one** reason why we cannot be sure.

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

[Total: 4]

8. Ospreys are birds that survive by hunting fish.



The number of ospreys in Britain is low.

This has been partly because of:

- hunting,
- egg collecting,
- poisoning by pesticides.

(a) Some ospreys have been poisoned by pesticides that farmers have put on their crops.

The ospreys take in pesticides from the fish they eat.

How could the pesticides get into the river?

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

(b) Ospreys are now protected from hunters and egg collectors.

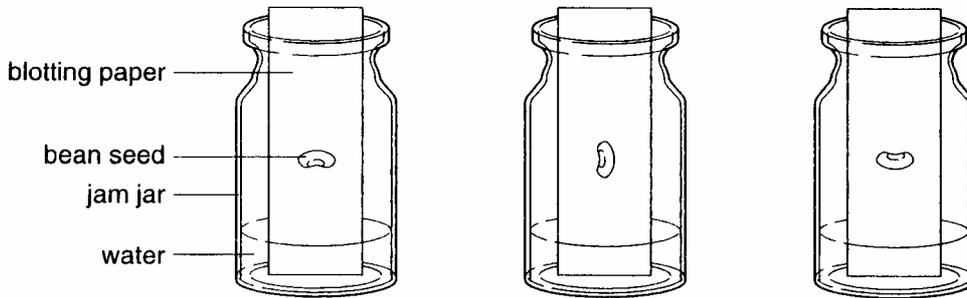
Suggest **two** ways they are protected.

1 .....  
.....  
2 .....  
.....[2]

[Total: 3]

**Section 3**

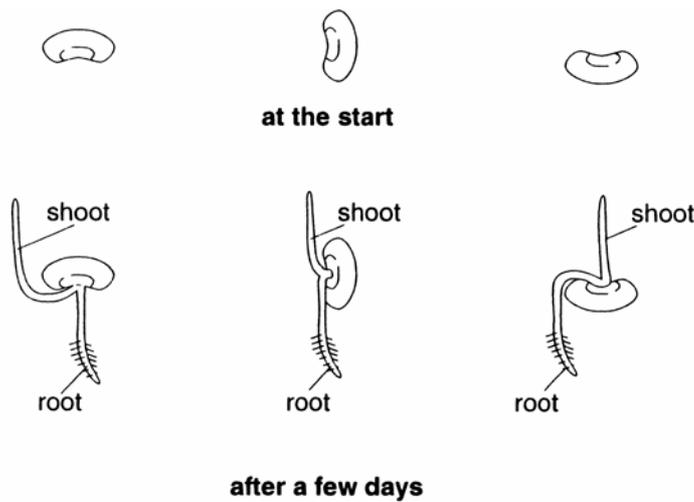
9. (a) Janet's class is investigating the directions that roots and shoots grow. They grow bean seeds in jam jars.



They put the beans in different positions.

They let them grow on a window sill for a few days.

These are their results.



Describe these results.

Explain why the shoots and roots grow in these directions.

Shoots .....

.....

Roots .....

.....[4]

**(b)** Many of the tomatoes we eat are imported from other countries.  
They are often picked while they are still green and unripe.  
Later they are ripened before they are sold.

**(i)** Suggest why tomatoes are transported while they are unripe.

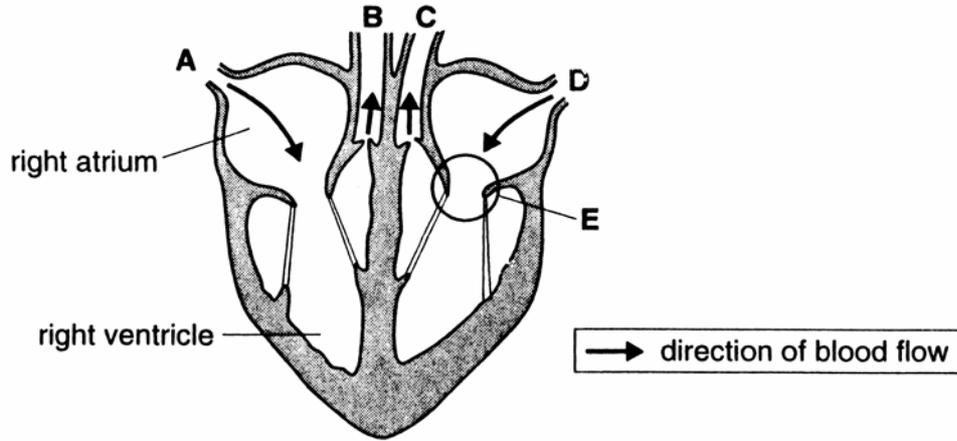
.....  
.....[1]

**(ii)** How can tomatoes be ripened quickly before they are sold?

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

[Total: 6]

10. The diagram shows a human heart.



(a) Describe the main job of the heart.

.....[1]

(b) It is important that part **E** works properly.  
 Explain what will happen if it does **not** work properly.

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

(c) Which blood vessels are arteries?  
 Choose from **A, B, C** or **D**.

.....[1]

**(d) (i)** Blood vessels carry blood round the body.

Write down the name of a blood vessel that transports blood away from the heart.

.....[1]

**(ii)** Some blood vessels allow materials to move in and out of the blood.

Write down the name of the blood vessels that exchange materials with the tissues.

.....[1]

[Total: 6]

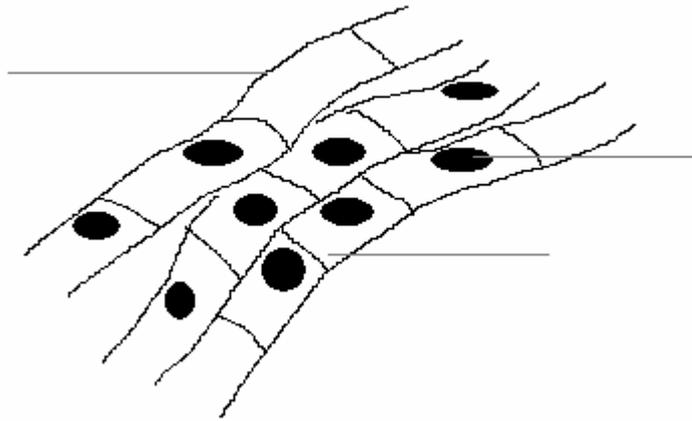
11. Amy uses a microscope to look at some muscle cells.

Amy draws a diagram of what she can see.

(a) Label the diagram.

Choose the best words from this list.

cell membrane  
cell wall  
cytoplasm  
nucleus



[3]

(b) Finish the table by writing in the name of the cell part next to the job it does.

Job	Name of cell part
Controls what the cell does and contains genetic information	
Controls the movement of substances in and out of the cell	
The place where chemical reactions take place; contains enzymes to speed up these reactions	

(c) Give two reasons why muscle cells need protein.

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

[Total: 8]

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**GCSE**

**BIOLOGY B**

Biology B Unit 1 Modules B1, B2, B3

**Specimen Mark Scheme**

Maximum mark for this paper is 60

**F** **B631/01**

60 mins

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**This specimen mark scheme consists of 4 printed pages.**

Question Number	Answer	Max Mark
<p>1(a)</p> <p>1(b)</p> <p>1(c)</p> <p>1(d)i</p> <p>1(d)ii</p>	<p>Increases / gets faster</p> <p>He needs to get more oxygen into the blood; For quicker respiration / so more energy can be released by respiration;</p> <p>Any <b>two</b> from: Inhaled air contains more oxygen; Inhaled air contains less carbon dioxide; Inhaled air contains less moisture; Inhaled air is usually not as warm; <b>(This must be a comparative statement)</b></p> <p>Anaerobic;</p> <p>Insufficient oxygen reaching his cells to meet energy demands;</p> <p style="text-align: right;"><b>Total marks</b></p>	<p>[1]</p> <p>[1]</p> <p>[1]</p> <p>[2]</p> <p>[1]</p> <p>[1]</p> <p>[7]</p>
<p>2(a)i</p> <p>2(a)ii</p> <p>2(b)</p> <p>2(c)i</p> <p>2(c)ii</p> <p>2(d)i</p> <p>2(d)ii</p>	<p>Nicotine</p> <p>cannot/hard to give up</p> <p>Stimulant</p> <p>tar/particulates</p> <p>D</p> <p>3.1</p> <p>birth weight decreases as more cigarettes smoked</p> <p style="text-align: right;"><b>Total marks</b></p>	<p>[1]</p> <p>[1]</p> <p>[1]</p> <p>[1]</p> <p>[1]</p> <p>[1]</p> <p>[7]</p>
<p>3(a)</p> <p>3(b)i</p> <p>3(b)ii</p> <p>3(c)</p>	<p>B to retina C to optic nerve; retina to react to light optic nerve to carry nerve impulses</p> <p>prevent damage; to retina/light sensitive layer/B</p> <p>Reflex</p> <p>Binocular</p> <p style="text-align: right;"><b>Total marks</b></p>	<p>[1]</p> <p>[1]</p> <p>[2]</p> <p>[1]</p> <p>[1]</p> <p>[6]</p>

4(a)i	photosynthesis;	[1]
4(a)ii	oxygen;	[1]
4(b)	Sunlight is needed for photosynthesis / to make food;	[1]
4(c)i	8am – 10 am; <b>(both for 1 mark)</b>	[1]
4(c)ii	more sunlight available;	[1]
	<b>Total marks</b>	<b>[5]</b>
5(a)	Any one description from: size; colour; fur; <b>(accept and two)</b>	[1]
5(b)	<b>(no mark for feature)</b> Any one from: (eyes at side of head) give wide field of vision to see predators approaching; (strong back legs) to provide fast movement for escape; (large ears) to hear movement as predator approaches; (different colour fur) camouflage to hide from predators; <b>(accept any correctly related suggestion)</b>	[1]
5(c)	genetic variation caused by the genes from parents; variation due to the environment such as scars/injuries etc;	[2]
	<b>Total marks</b>	<b>[4]</b>
6(a)	Any two from: Random placing of quadrat; count plants inside the quadrat; Repeat; Calculate average for field;	[2]
6(b)	Any one from: Peter holding net too high; Peter sweeping across rather than from lower down and up the plants; there are less tall plants where Peter is sweeping;	[1]
6(c)	pitfall trap;	[1]
	<b>Total marks</b>	<b>[4]</b>
7(a)i	bones;	[1]
7(a)ii	imprint in rock around fossil;	[1]
7(b)	Any one from: parts of the body are lost, fossil incomplete; not all of the body parts are fossilised;	[1]
7(c)	Others show similar features; Fossil record not complete	[1]
	<b>Total marks</b>	<b>[4]</b>

<p><b>8(a)</b></p> <p><b>8(b)</b></p>	<p>Pesticides land on the soil then the rain leaches the pesticides through the soil into the water;</p> <p>Any two from: Laws have been passed to prevent people hunting the osprey; removing eggs from nests; destroying their habitats; Public education programmes make people more aware of the problem; Their habitats become conservation areas to reduce damage to habitat;</p> <p style="text-align: right;"><b>Total marks</b></p>	<p>[1]</p> <p>[2]</p> <p>[3]</p>
<p><b>9(a)</b></p> <p><b>9(b)i</b></p> <p><b>9(b)ii</b></p>	<p><b>Max two marks for shoots</b> (shoots) grow upwards/towards the light/(positive) phototropism;</p> <p><b>Max two marks for roots</b> (roots) grow downwards/towards the effects of gravity/(positive) geotropism; <b>(Allow higher level answers about auxin distribution and cell elongation)</b></p> <p><b>Any one</b> Prevent damage/last longer/delay aging/delay decay <b>(Allow easier to pick when unripe so less damage caused before storage);</b></p> <p>By using plant hormones;</p> <p style="text-align: right;"><b>Total marks</b></p>	<p>[4]</p> <p>[1]</p> <p>[1]</p> <p>[6]</p>
<p><b>10(a)</b></p> <p><b>10(b)</b></p> <p><b>10(c)</b></p> <p><b>10(d)i</b></p> <p><b>10(d)ii</b></p>	<p>Pumps/contracts/pushes blood;</p> <p><b>Any two</b> If faulty then the following cannot be achieved: opening and closing of valve; prevention of back flow of blood; maintenance of high pressure;</p> <p><b>B and C (Both required for one mark)</b></p> <p><b>Any one</b> pulmonary artery/aorta; Capillary/capillaries;</p> <p style="text-align: right;"><b>Total marks</b></p>	<p>[1]</p> <p>[2]</p> <p>[1]</p> <p>[1]</p> <p>[6]</p>
<p><b>11(a)</b></p> <p><b>11(b)</b></p> <p><b>11(c)</b></p>	<p>correct labelling of cell membrane, nucleus, cytoplasm.</p> <p>nucleus; cell membrane; cytoplasm.</p> <p>growth / repair</p> <p style="text-align: right;"><b>Total marks</b></p>	<p>[3]</p> <p>[3]</p> <p>[2]</p> <p>[8]</p>