

**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

**H** **B631/02**

60 mins

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 27 printed pages.**

**BLANK PAGE**

**Answer all questions.**

**Section 1**

1. Roy goes to basketball training.

He finds that many changes take place inside his body.

Pulse rate increases



Breathing rate increases

Breathes more deeply

Produces sweat

© Microsoft

**(a)** Roy's breathing rate increases during the training session.

Explain why.

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

**(b)** Roy is also breathing more deeply.

Complete these sentences.

When Roy breathes in the volume of his lungs .....

This means that the air pressure in the lungs .....

so that air rushes into the lungs.

[2]

**(c)** In Roy's muscle cells, glucose is converted into lactic acid, releasing a small amount of energy.

**(i)** Why is only a small amount of energy released?

.....[1]

**(ii)** Describe what happens to the lactic acid when Roy stops exercising hard.

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

[Total: 7]

2. Evie smokes cigarettes.



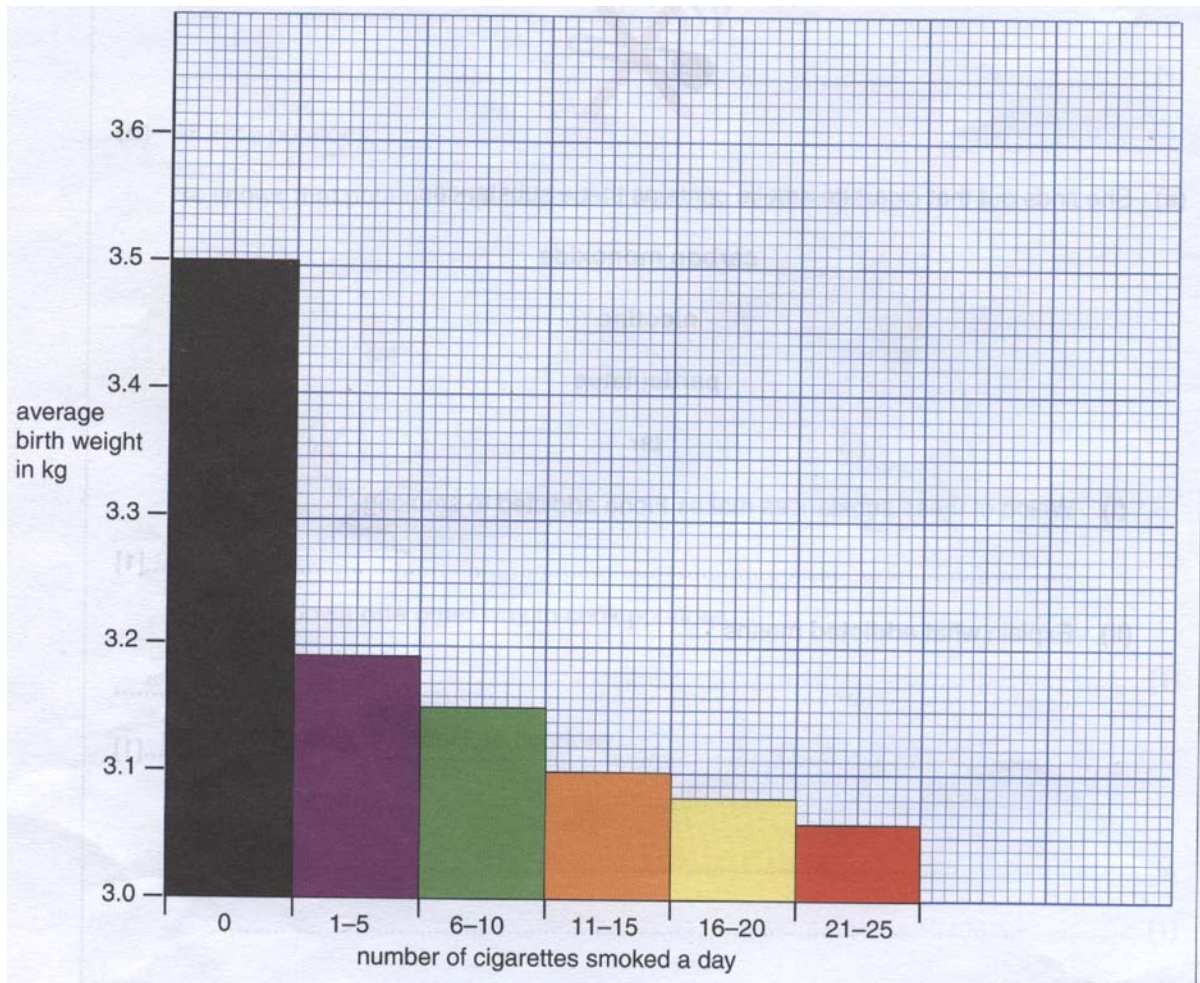
(a) She is **addicted** to smoking cigarettes.

Explain what **addicted** means.

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

(b) 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 .....kg [1]

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

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

**(c)** Cigarette smoke contains thousands of chemicals.

Two of these chemicals are carbon monoxide and particulates.

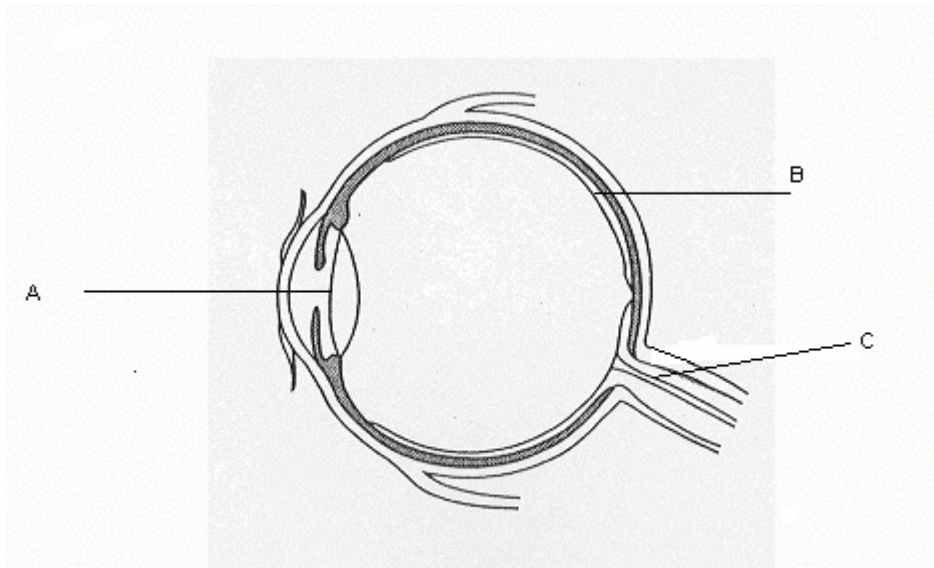
Describe their effects on the body.

.....  
.....  
.....  
.....  
.....

[3]

Total [6]

3. (a) Look at the diagram of the structure of the eye.



Draw a line from each **label** and to its correct **job**.

**label**

**A**

**B**

**C**

**job**

react to light

carry nerve impulses

focus light rays

[1]

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



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

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

**(c)** John is 80 years old.  
He has problems with eye accommodation.

**(ii)** Describes how the eye accommodates.

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

**(iii)** Explain why John's poor eye accommodation could be a problem.

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

[Total: 7]



**Section 2**

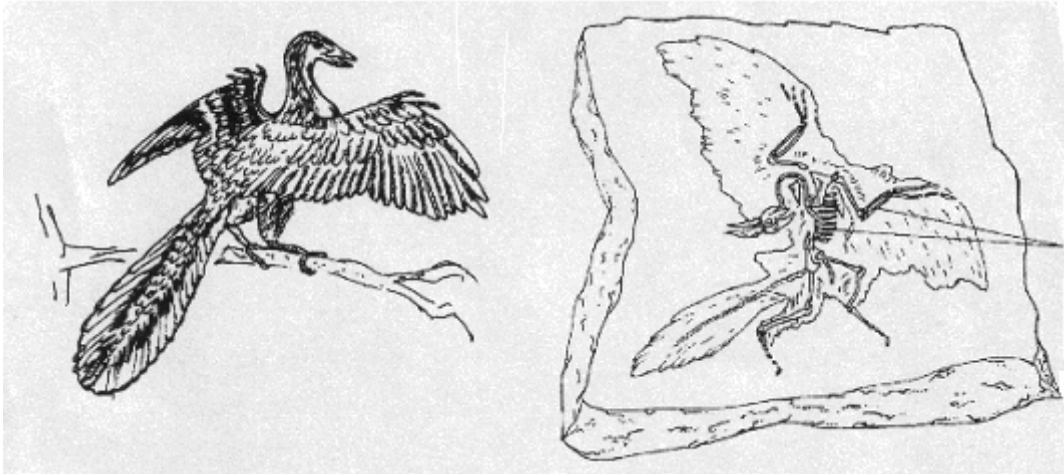
4. Picture **A** shows an animal that lived millions of years ago.

Now it is extinct.

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

**Picture A**  
(this is what scientists think the animal looked like)

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



(a) The fossil was found in rock.

Look at picture **B**.

(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.

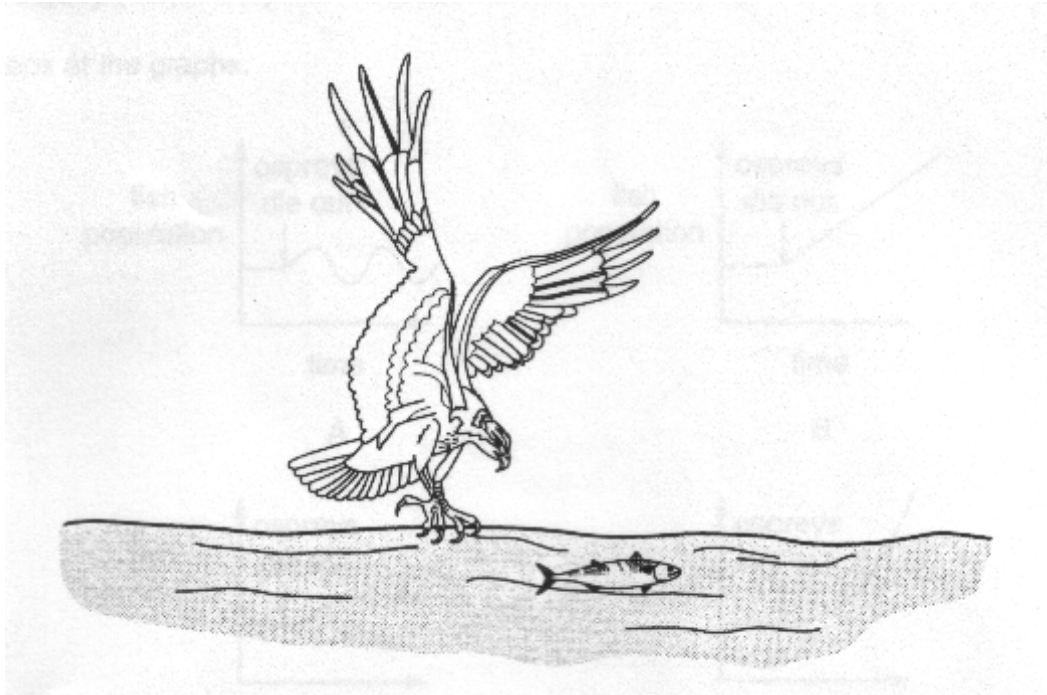
We cannot be **sure** that birds and reptiles had the same ancestor.

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

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

[Total: 4]

5. 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]

**(c)** When pesticides such as DDT were used, they harmed ospreys.

The ospreys were unable to breed successfully.

The concentration of DDT was much higher in ospreys than in the fish they ate.

Explain why the concentration was higher in the ospreys.

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

[Total: 5]

6. Mike and Linda estimate how many bluebell plants are in a wood.  
 They use quadrats to collect the data.  
 Each quadrat covers 1 m<sup>2</sup>.

(a) Describe how a quadrat is used to collect **reliable** data.

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

The table shows their results.

	<b>Mike's results</b>	<b>Linda's results</b>
total area of wood	5000 m <sup>2</sup>	5000 m <sup>2</sup>
number of quadrats	20	10
average number of bluebells in each 1 m <sup>2</sup> quadrat	9	20
estimated number of bluebells in the wood	45 000	

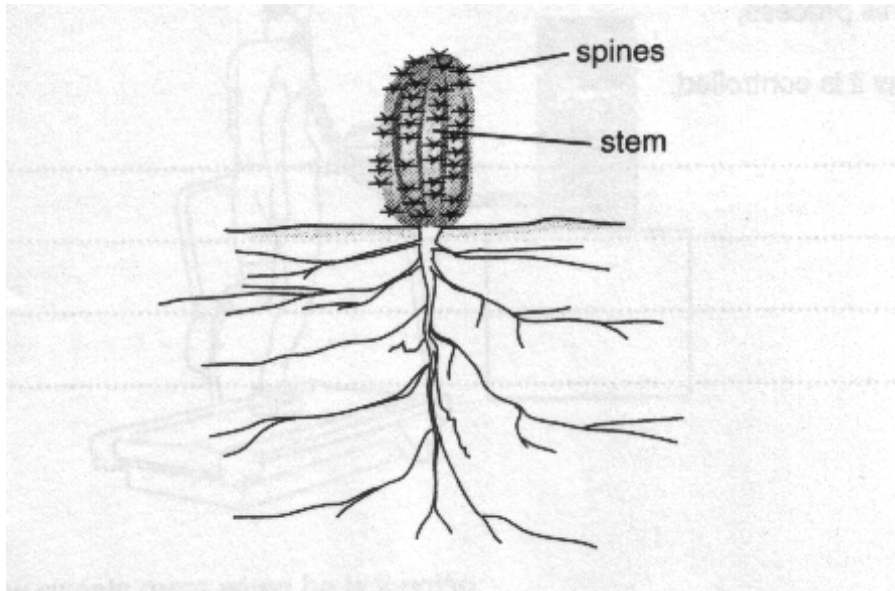
(b) Look at the table.

Work out the estimated number of bluebells using Linda's results.

Estimated number of bluebells = .....[1]

[Total: 3]

7. The drawing shows a cactus plant.  
This cactus plant lives in a hot, dry desert.  
The leaves have evolved to become spines.  
The stem is green.



- (a) Plants have roots to take in water.  
This cactus plant has very long roots.  
Suggest how very long roots help cactus plants to survive in dry desert conditions.

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

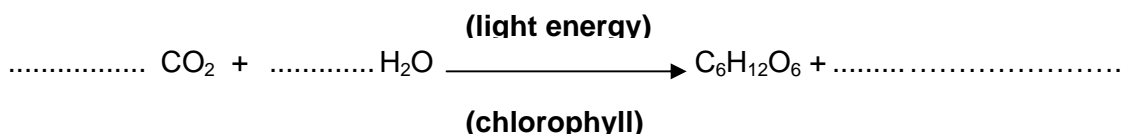
- (b) The spines (leaves) of a cactus plant are **not** very efficient at photosynthesis.  
Explain why.

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

[Total: 3]

8. Plants make food by the process of photosynthesis.

(a) Complete and balance the equation for photosynthesis.

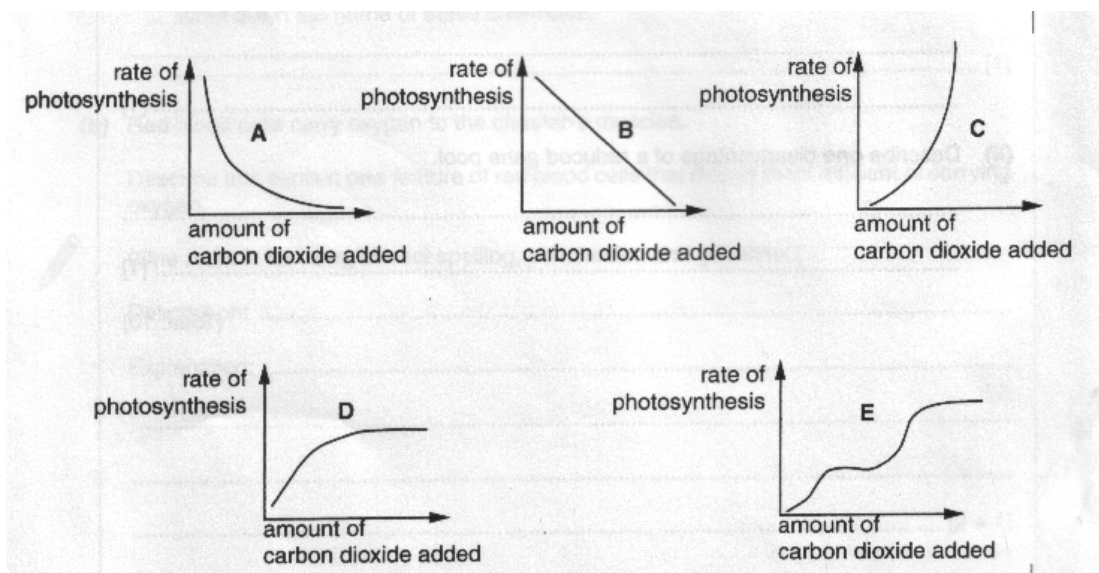


[2]

(b) Kate grows tomatoes in a glasshouse.

She adds carbon dioxide to the air inside the glasshouse.

Look at the graphs.



Which graph shows what happens to the rate of photosynthesis when Kate adds carbon dioxide?

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

.....[1]

(c) Explain why the food made by photosynthesis is stored as starch.

.....[2]

[Total:5]

**Section 3**

9. (a) 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.

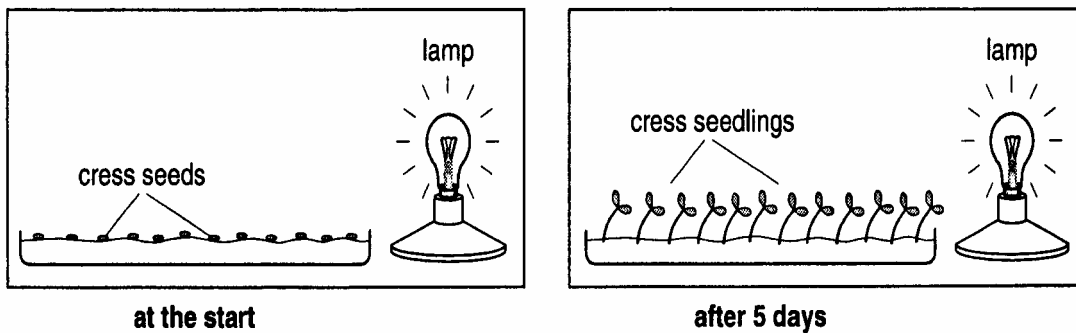
(i) Suggest why tomatoes are transported while they are unripe.

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

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

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

(b) Pat and Janet did an experiment with cress.  
They grew cress seeds next to a lamp.  
Look at their results.



The seedlings grew towards the light.

Explain why.

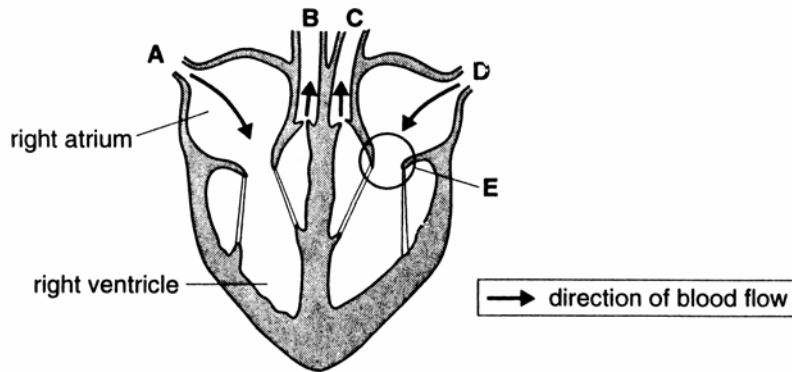
Answer as fully as you can.

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

[Total: 6]



10. The diagram shows a human heart.



(a) Explain why vessels **B** and **C** are arteries

.....[1]

(b) Look at the diagram.

Why does the right ventricle have a thicker muscle wall than the right atrium?

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

(c) It is important that part **E** works properly.

Explain what will happen if it does **not** work properly.

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

(d) Some animal hearts do not have **two** ventricles.

Fish have only one ventricle.

Explain the advantage of having **two** ventricles.

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

[Total: 6]



11. This question is about **growth**.

(a) Describe **two** differences between animal and plant growth.

Difference one .....

.....

Difference two.....

.....[2]

- (b) The table shows some information about the growth of a bean plant.  
A bean seed was given water and allowed to germinate.

Time in weeks from planting bean seed	Weight in grams
0	3.1
0.5	4.9
1.0	2.6
1.5	5.1
2.0	10.0
2.5	20.6
3.0	41.5
4.0	64.7
5.0	86.1
6.0	101.3
7.0	110.0
8.0	128.4
9.0	131.1
10	134.9
11	135.1
12	136.5
13	137.6
14	138.4
15	139.8

Look at the table.

- (i) During what period did the seed **lose** dry weight?

Between week .....and week.....[1]

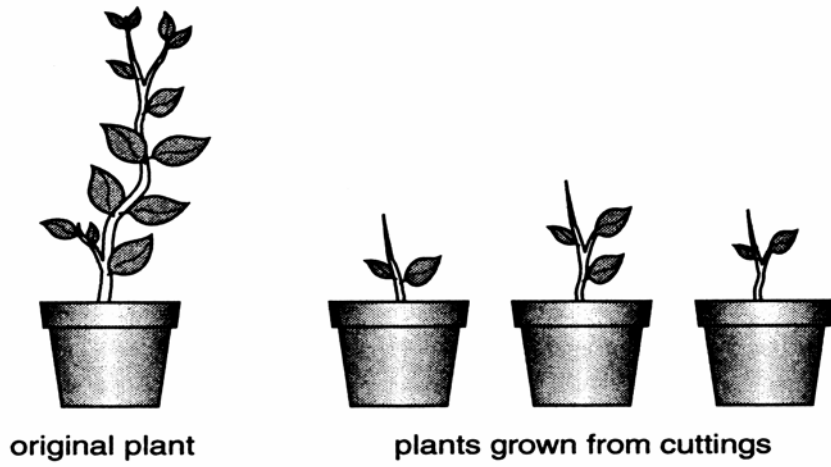
- (ii) Suggest **one** reason why this happened.

.....[1]

- (iii) Explain what is happening in the plant between weeks 10 and 15?

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

(c) New plants can also be grown by taking cuttings.



The new plants are clones.

(i) What is a **clone**?

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

(ii) Explain why cloning plants is easier than cloning animals.

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

[Total: 8]

**BLANK PAGE**

**GCSE**

**BIOLOGY B**

Biology B Unit 1 Modules B1, B2, B3

**Specimen Mark Scheme**

Maximum mark for this paper is 60

**H** **B631/02**

60 mins

---

**This specimen mark scheme consists of 5 printed pages.**

Question Number	Answer	Max Mark
<b>Section 1</b> <b>1(a)</b> <b>1(b)</b> <b>1(c)i</b> <b>1(c)ii</b>	He needs to get more oxygen into the blood; For quicker respiration / so more energy can be released by respiration; Increases / gets larger; Decreases / drops; Because he is respiring anaerobically; Any two from: Carried away in blood; To the liver; To be broken down when oxygen available;	[1] [1] [1] [1] [2] <b>Total marks</b> [7]
<b>2(a)</b> <b>2(b)i</b> <b>2(b)ii</b> <b>2(c)</b>	cannot/difficult to give up 3.1 birth weight decreases with increasing number of cigarettes smoked <b>any three from:</b> carbon monoxide, less oxygen ; carried by red blood cells; to cells for respiration; less energy released particulates, accumulate; in air sacs/alveoli; block exchange of gases; irritate lining of bronchioles	[1] [1] [1] [3] <b>Total marks</b> [6]



<p><b>3(a)</b></p> <p><b>3(b)</b></p> <p><b>3(c)i</b></p> <p><b>3(c)ii</b></p>	<p>A to focus light rays B to react to light C to carry nerve impulses</p> <p>prevent damage; to retina/light sensitive layer/B</p> <p><b>any two from:</b> lens changes shape; by circulatory muscles/suspensory ligaments; to focus on objects at different distances; alters focal distance</p> <p><b>any two from:</b> cannot adjust focus quickly; from close to distant objects; because of weak muscles/stiff ligaments; danger aspect e.g. cannot adjust quickly from looking in window to looking to see oncoming traffic.</p> <p style="text-align: right;"><b>Total marks</b></p>	<p>[1]</p> <p>[2]</p> <p>[2]</p> <p>[2]</p> <p>[2]</p> <p>[7]</p>
<p><b>Section 2</b></p> <p><b>4(a)i</b></p> <p><b>4(a)ii</b></p> <p><b>4(b)</b></p> <p><b>4(c)</b></p>	<p>bones; imprint in rock around fossil;</p> <p><b>Any one from:</b> parts of the body are lost; fossil incomplete; not all of the body parts are fossilised;</p> <p>fossil record not complete; Others show similar features;</p> <p style="text-align: right;"><b>Total marks</b></p>	<p>[1]</p> <p>[1]</p> <p>[1]</p> <p>[1]</p> <p>[4]</p>
<p><b>5(a)</b></p> <p><b>5(b)</b></p> <p><b>5(c)</b></p>	<p>Pesticides land on the soil then the rain leaches the pesticides through the soil into the water;</p> <p><b>Any two from:</b> 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>Fish take in pesticides from water/osprey eat fish/DDT stays in Ospreys body/osprey eat fish/have build up (WTTE)</p> <p style="text-align: right;"><b>Total marks</b></p>	<p>[1]</p> <p>[2]</p> <p>[2]</p> <p>[5]</p>

<p><b>6(a)</b></p>	<p><b>Any two from:</b>            Random placing of quadrat and count plants inside;            if plant is touching the frame include it in your count if more than half of it is inside the quadrat;            Repeat procedure at least 5 times;            calculate average number of plants per square metre in field;</p>	<p>[2]</p>
<p><b>6(b)</b></p>	<p>10 x 20 = 200;            5000 ÷ 10 = 500;            500 x 200 = 100 000;  <b>Correct method/correct answer = 1 mark</b></p>	<p>[1]  <b>Total marks</b>            [3]</p>
<p><b>7(a)</b></p>	<p>able to absorb water from a larger area;</p>	<p>[1]</p>
<p><b>7(b)</b></p>	<p><b>Any two from:</b>            small surface area so less sunlight absorbed;            very few stomata for absorbing carbon dioxide;            very few chloroplasts containing chlorophyll to absorb sunlight;</p>	<p>[2]  <b>Total marks</b>            [3]</p>
<p><b>8(a)</b></p>	<p>6 (CO<sub>2</sub>) + 6 (H<sub>2</sub>O);            6 O<sub>2</sub>;</p>	<p>[2]</p>
<p><b>8(b)</b></p>	<p>D</p>	<p>[1]</p>
<p><b>8(c)</b></p>	<p><b>Any two from:</b>            soluble to insolubles (key point); Glucose (food) is soluble; converted to starch as insoluble; storage needs to be insoluble/OWTTW</p>	<p>[2]  <b>Total marks</b>            [5]</p>
<p><b>Section 3</b></p>	<p><b>9(a)i</b></p>	<p>[1]</p>
<p><b>9(a)ii</b></p>	<p>Any one (<b>allow easier to pick when unripe so less damage caused before storage</b>)            Prevent damage/last longer/delay aging/delay decay;</p>	<p>[1]</p>
<p><b>9(b)</b></p>	<p>By using plant hormones;</p>	<p>[1]</p>
	<p><b>Any four from:</b>            (positive) phototropism;            auxins move through the plant in solution/by diffusion;            auxin is made in the (shoot) tip;            unequal distribution in response to light;            auxin brings about curvature/cell elongation;</p>	<p>[4]  <b>Total marks</b>            [6]</p>

<b>10(a)</b>	(Arteries) carry blood away from the heart	[1]
<b>10(b)</b>	Greater force needed/higher pressure ( <b>allow has to pump blood to the rest of the body and not just into the adjacent chamber</b> )	[1]
<b>10(c)</b>	<b>Any two from:</b> If faulty then the following cannot be achieved; opening and closing of valve; prevention of back flow of blood; maintenance of high pressure;	[2]
<b>10(d)</b>	Higher pressures possible; (therefore) greater rate of flow to the tissues;	[2]
	<b>Total marks</b>	[6]
<b>11(a)</b>	<b>Any two from:</b> Animals tend to grow to a finite size but plants can grow continuously; Cell enlargement is the main method by which plants gain height; Cell division is mainly restricted to the tips of shoots and roots; Many plant cells retain the ability to differentiate but animal cells lose it at an early stage;	[2]
<b>11(b)i</b>	0.5 and 1.0 (no units needed) ( <b>both needed for one mark</b> );	[1]
<b>11(b)ii</b>	Food stores (in the seed) being used up to provide energy for growth;	[1]
<b>11(b)iii</b>	(Plant) is (slowly) increasing in mass; (Plant) is photosynthesising/building up new cells;	[2]
<b>11(c)i</b>	(clones) have the same genetic make up ( <b>allow same DNA</b> );	[1]
<b>11(c)ii</b>	Many plant cells retain ability to differentiate unlike animal cells which usually lose this ability at an early stage;	[1]
	<b>Total marks</b>	[8]
	<b>Overall Marks</b>	[60]