

Cambridge  
**IGCSE**

**Cambridge International Examinations**  
Cambridge International General Certificate of Secondary Education

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**BIOLOGY**

**0610/33**

Paper 3 Core

**May/June 2016**

**1 hour 15 minutes**

Candidates answer on the Question Paper.

No Additional Materials are required.

**READ THESE INSTRUCTIONS FIRST**

Write your Centre number, candidate number and name on all the work you hand in.

Write in dark blue or black pen.

You may use an HB pencil for any diagrams or graphs.

Do not use staples, paper clips, glue or correction fluid.

**DO NOT WRITE IN ANY BARCODES.**

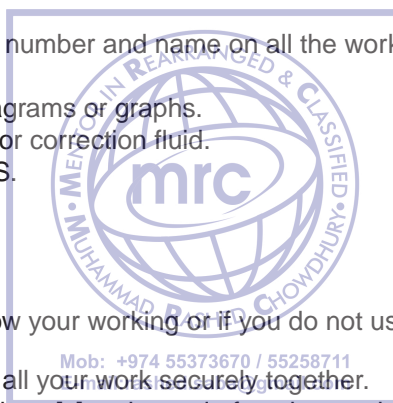
Answer **all** questions.

Electronic calculators may be used.

You may lose marks if you do not show your working or if you do not use appropriate units.

At the end of the examination, fasten all your work securely together.

The number of marks is given in brackets [ ] at the end of each question or part question.



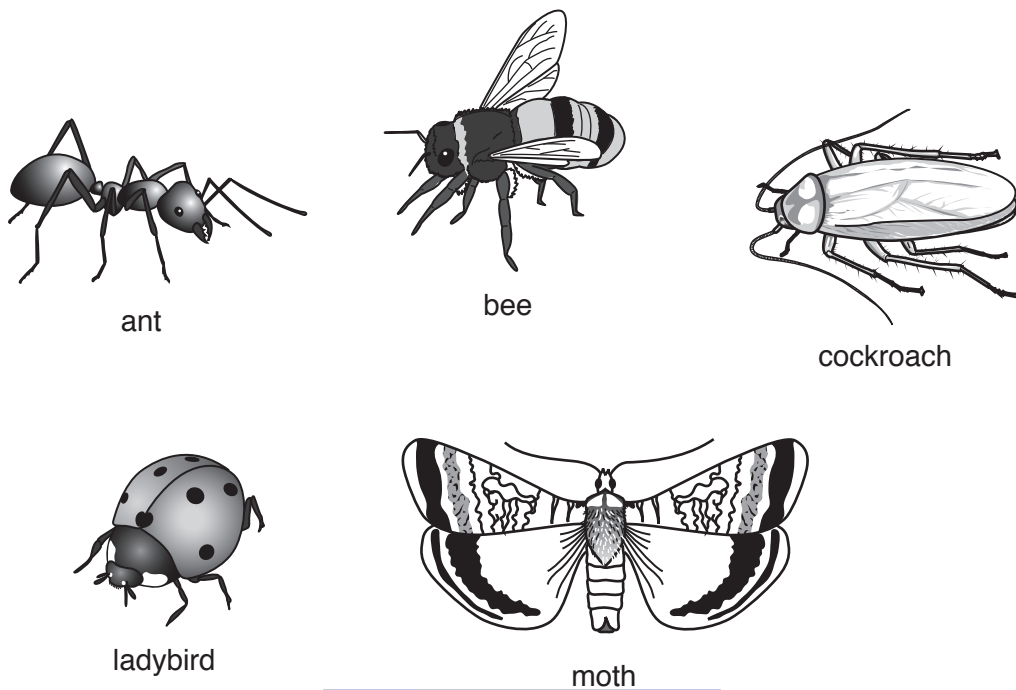
The syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

This document consists of **21** printed pages and **3** blank pages.

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1 Fig. 1.1 shows five arthropods.



not drawn to scale



(a) State **one** feature that is shared by **all** arthropods.  
 .....[1]

(b) The five animals in Fig. 1.1 all belong to the same group of arthropods.

(i) Name this group of arthropods.

Choose your answer from this list.

- arachnids      crustaceans      insects      myriapods**

.....[1]

(ii) State **two** visible features of the bee, shown in Fig. 1.1, which place it in this group.

1 .....

2 .....

[2]

[Total: 4]

2 Fig. 2.1 shows the flow of blood through the human heart and its associated blood vessels **A**, **B**, **C** and **D**.

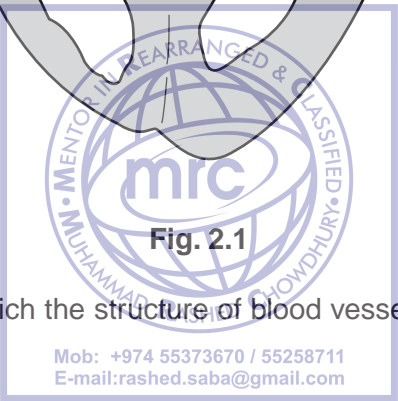
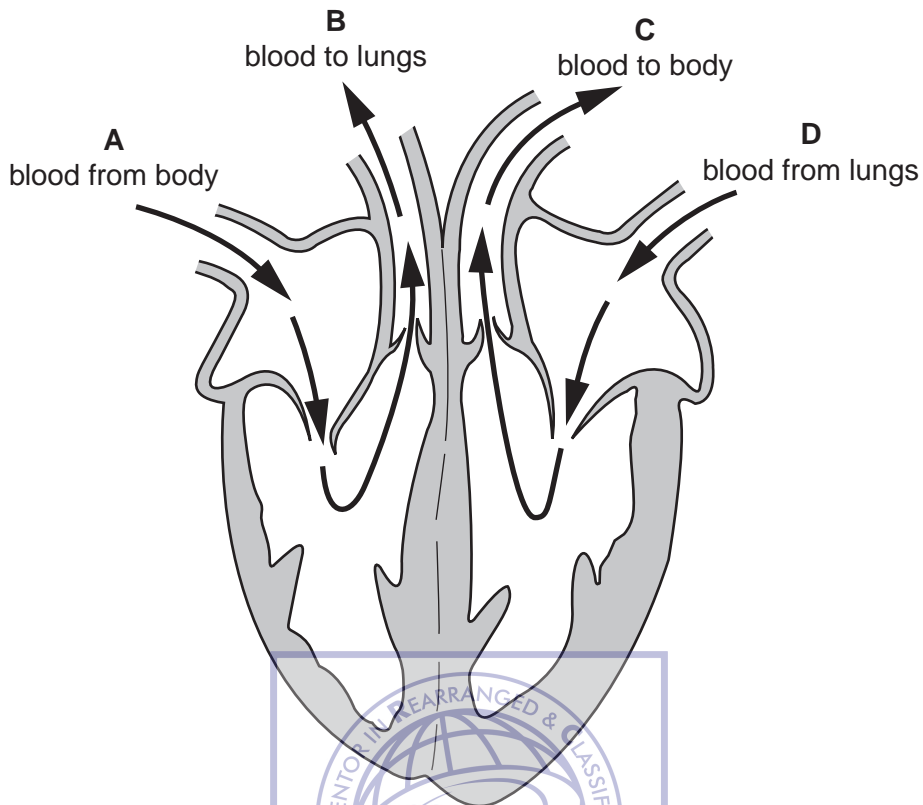


Fig. 2.1

(a) (i) State **two** ways in which the structure of blood vessel **C** is different from the structure of blood vessel **A**.

1 .....

.....

2 .....

.....

[2]

(ii) Tick the box that describes the blood in the vessel labelled **D**.

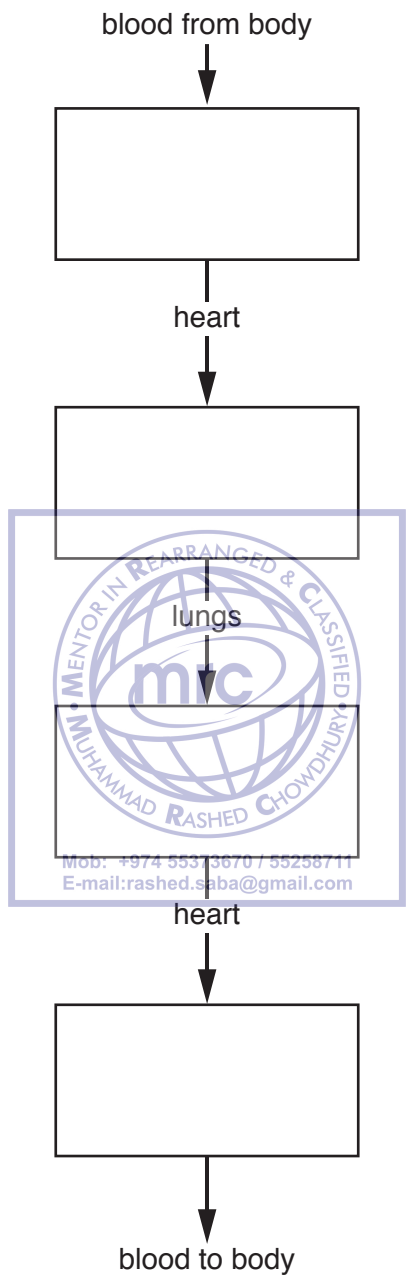
- high pressure, deoxygenated
- high pressure, oxygenated
- low pressure, deoxygenated
- low pressure, oxygenated

[1]

(b) Complete the flow chart by writing the **name** of each blood vessel in the correct box to show the order in which blood travels through them.

Use names from this list.

**aorta      pulmonary artery      pulmonary vein      vena cava**



[3]

[Total: 6]

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3 (a) Water enters plants through the root hairs and escapes to the air from the leaves.

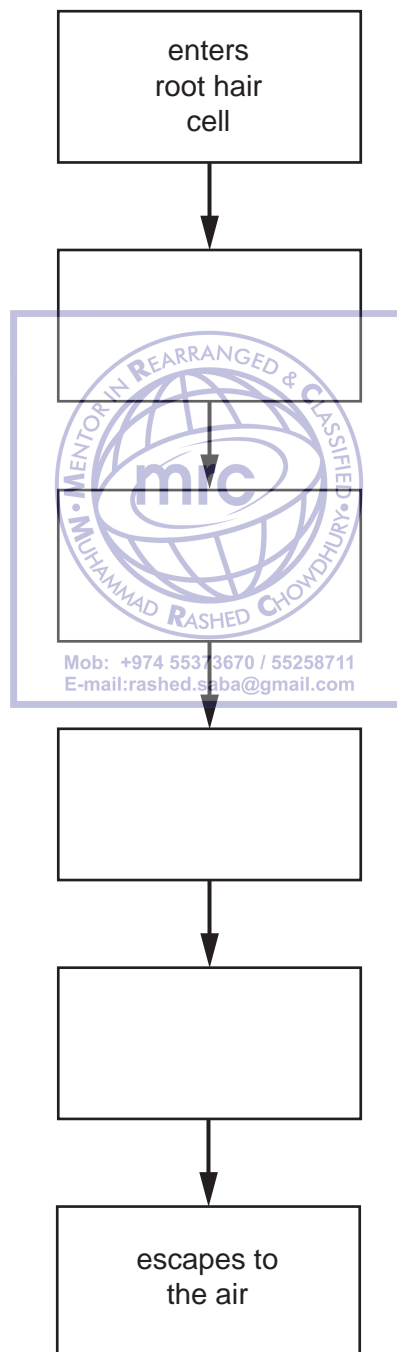
(i) Name the term that is used to describe the loss of water vapour from the leaves.

.....[1]

(ii) Complete the flow chart by writing in the boxes the names of the parts through which water passes after it enters the root hair cells.

Choose words from the list.

mesophyll cells      cortex cells      stomata      xylem



[3]

Fig. 3.1 shows a display of cut flowers in a shop.

At 6 am the flowers were placed in identical jars, **E**, **F**, **G** and **H**.

Each jar contained 500 cm<sup>3</sup> of water.

At 8 pm the jars all contained different volumes of water.

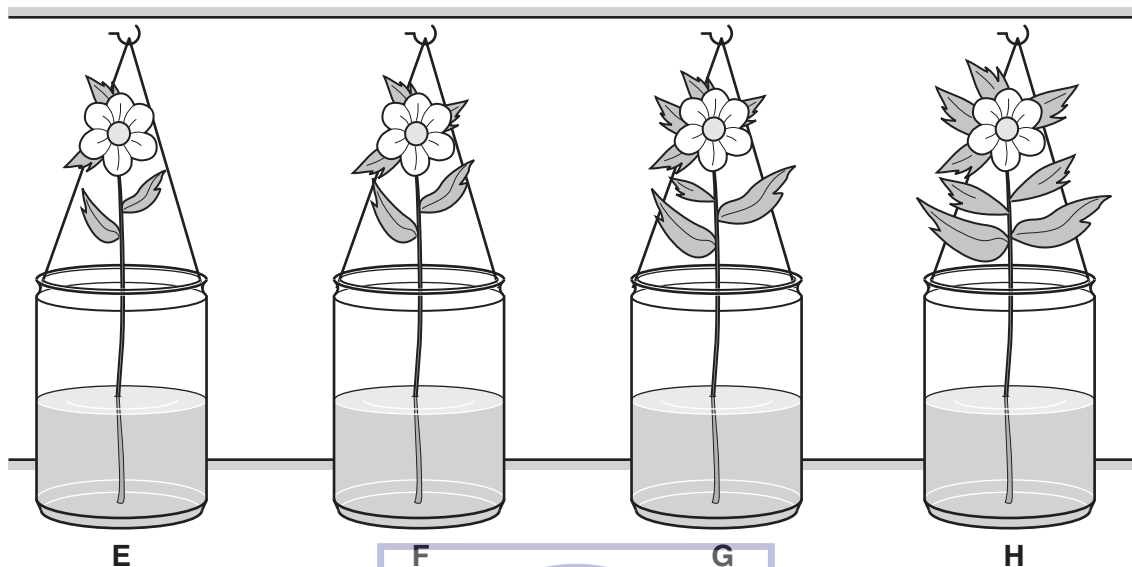


Fig. 3.1

- (b) The volume of water remaining in jars **E**, **F**, **G** and **H** was measured at intervals between 6 am and 8 pm.

The results are shown in the graph in Fig. 3.2.

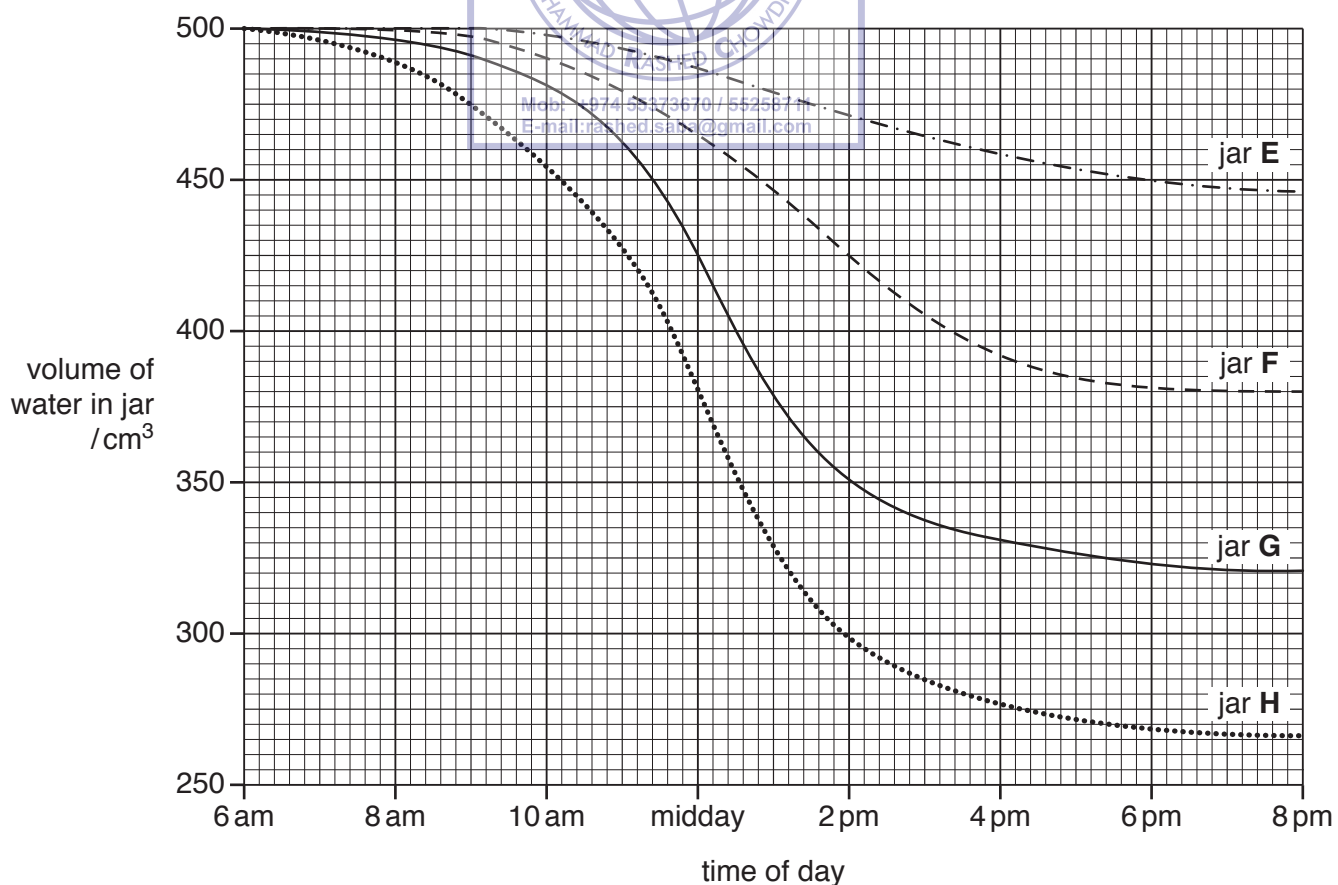


Fig. 3.2









5 Genetic engineering can be used to improve crops.

(a) Explain the meaning of the term *genetic engineering*.

.....

.....

.....

.....

.....

.....[2]

Fig. 5.1 shows part of a newspaper article about a new variety of maize.

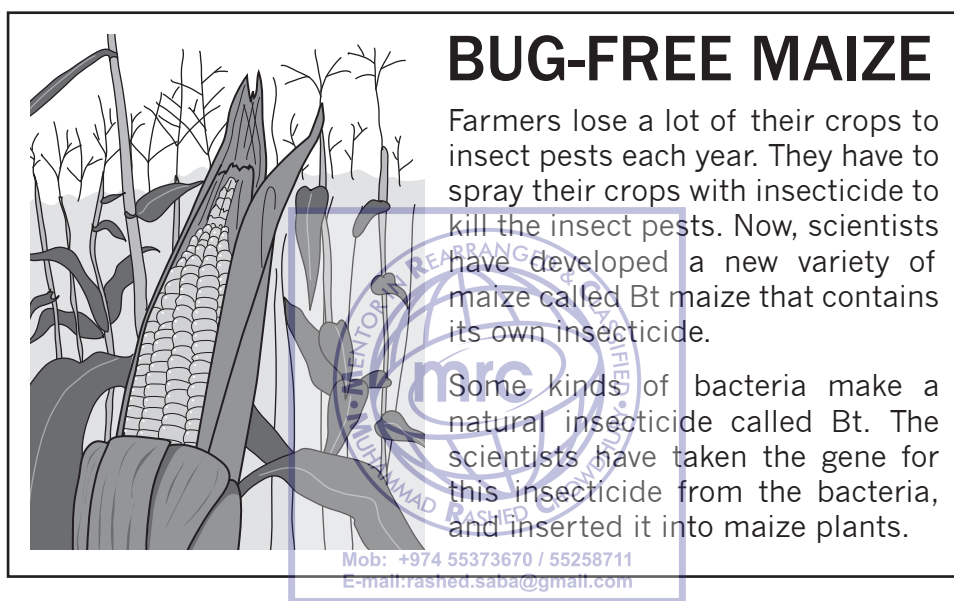


Fig. 5.1

(b) (i) The new Bt maize contains a gene taken from bacteria.

Define the term *gene*.

.....

.....

.....

.....

.....

.....[2]

(ii) Use the information in Fig. 5.1 to suggest how the addition of this gene could increase the farmer's maize crop.

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

(c) Maize plants are wind-pollinated.

(i) Describe what is meant by the term *pollination*.

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

(ii) Fruit trees are pollinated by insects.

Suggest why growing Bt maize near to apple trees might reduce the yield of the fruit crop.

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

(d) The development of Bt maize is one example of genetic engineering.

State **two other** examples of genetic engineering

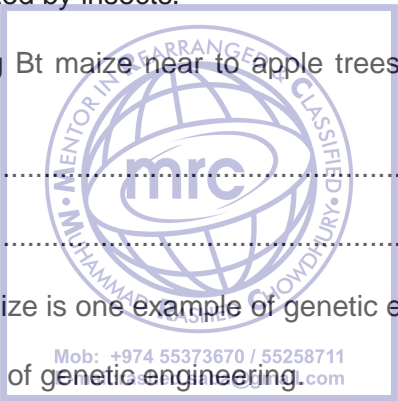
1 .....

.....

2 .....

..... [2]

[Total: 10]







7 The development of biological washing powders using enzymes from bacteria is an example of biotechnology.

(a) State **two** reasons why bacteria are useful in biotechnology, such as in the development of biological washing powders.

1 .....

.....

2 .....

.....

[2]

(b) Fig. 7.1 shows part of a label taken from a packet of '5 Star Bio' washing powder.

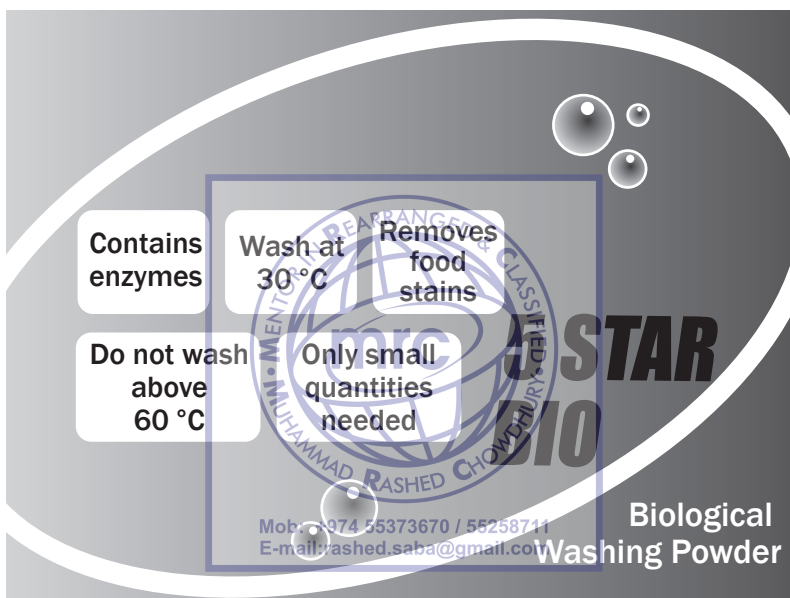


Fig. 7.1

Use the information shown in Fig. 7.1 to:

(i) explain how this washing powder removes food stains

.....

.....

.....

.....

.....

.....

[2]



(ii) explain why the manufacturer recommends washing at 30°C and not above 60°C

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

(iii) suggest why only small quantities of washing powder are needed to wash a large quantity of clothes.

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

(c) Name an enzyme that could be used to remove fat stains from clothing.

.....[1]

[Total: 8]



8 Fig. 8.1 shows a drawing of a section through a human eye.

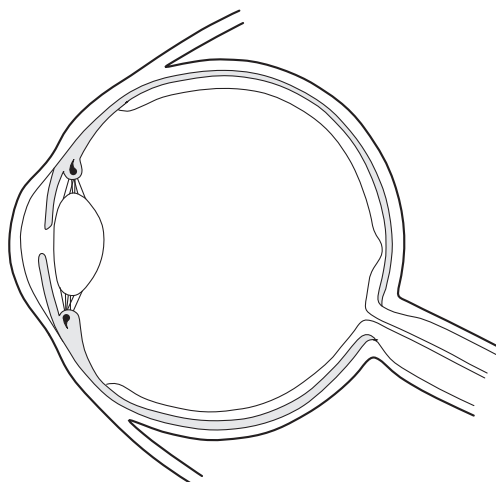


Fig. 8.1

(a) (i) On Fig. 8.1, label **and** name the part of the eye which focuses light to form a clear image. [2]

(ii) On Fig. 8.1, label **and** name the part of the eye where the image is formed. [2]

(b) Glaucoma is a disorder which affects the eyes.

Some forms of glaucoma can be inherited.

(i) What is meant by the term *inherited*?

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

(ii) Glaucoma can be caused by a recessive allele, **g**.

Explain the meaning of the terms:

recessive .....

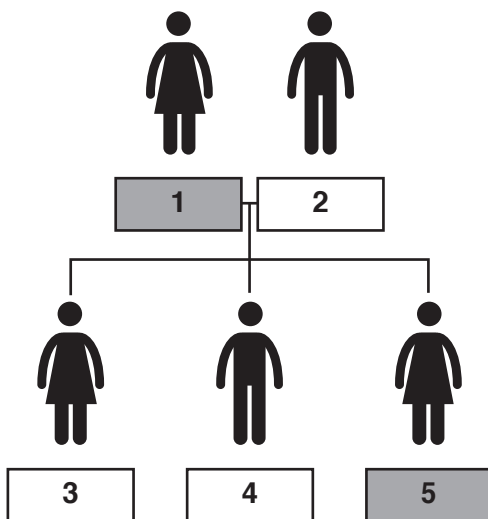
.....

allele .....

.....

[2]

(c) Fig. 8.2 shows part of a family tree in which some of the people have the type of glaucoma that is caused by the recessive allele, **g**.





 has glaucoma  
 normal vision

Fig. 8.2

Using **G** to represent the dominant allele and **g** to represent the recessive allele, complete the table to show the genotype of each member of the family.

person	genotype
1	.....
2	.....
3	.....
4	.....
5	.....

[3]

[Total: 10]

9 (a) Fig. 9.1 shows a diagram of a sustainable fish farm.

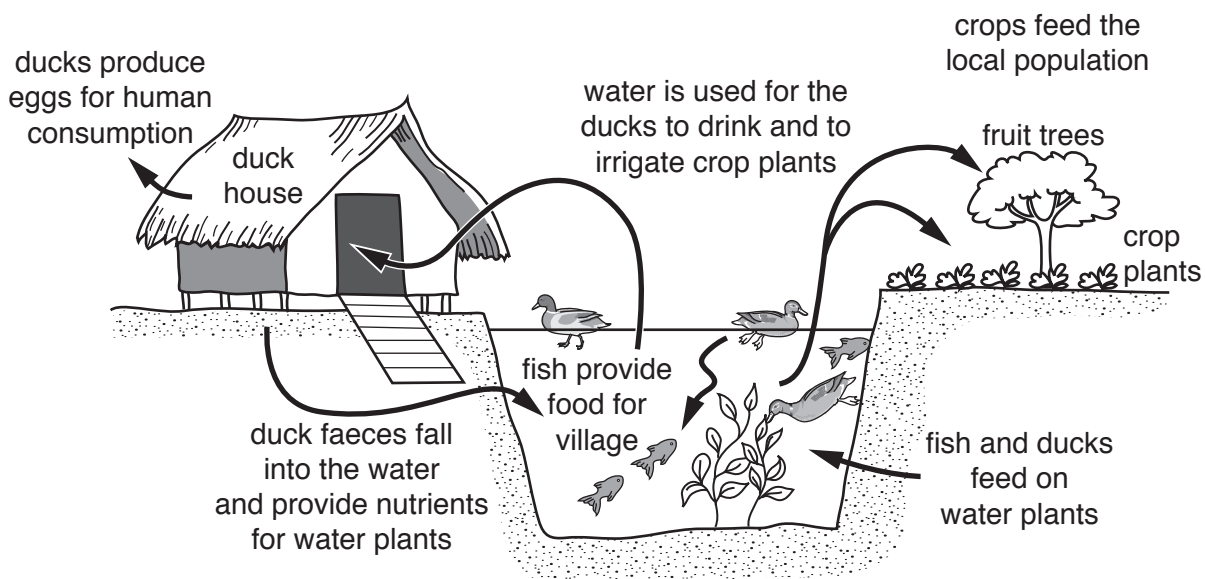


Fig. 9.1

(i) The fish grown in this fish farm are herbivores.

Define the term *herbivore*.

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

(ii) Other organisms in the pond break down dead or decaying matter.

Name this group of organisms:

.....[1]

(iii) The method of fish farming shown in Fig. 9.1 is a good example of the conservation of resources.

Suggest **three** reasons for this statement.

1 .....  
.....  
2 .....  
.....  
3 .....  
.....

[3]



(b) Explain what is meant by a *sustainable resource*.

.....

.....

.....

.....

.....

.....[2]

**[Total: 7]**



10 Fig. 10.1 shows an early stage in the birth of a baby.

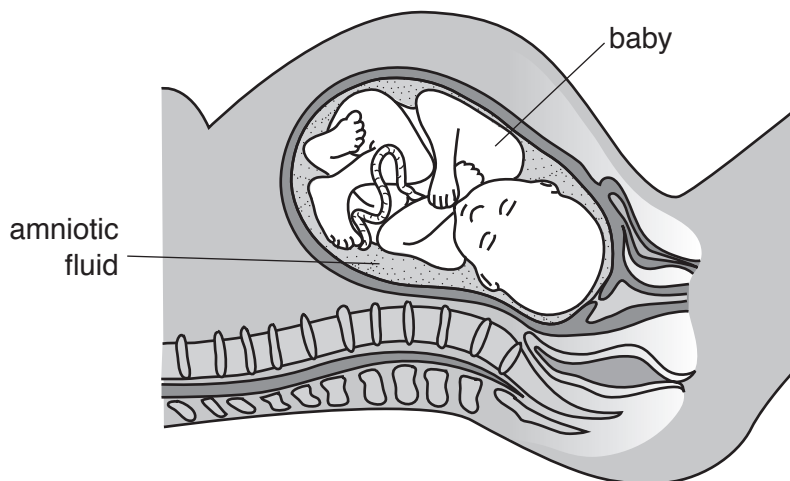


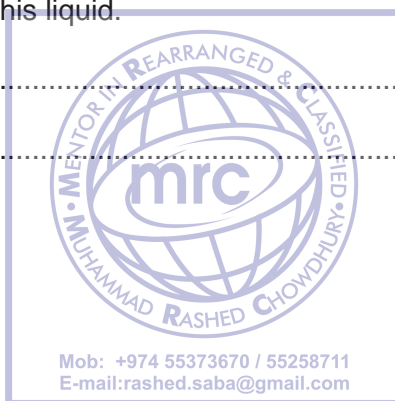
Fig. 10.1

(a) The unborn baby is surrounded by amniotic fluid.

Describe **one** function of this liquid.

.....

..... [1]



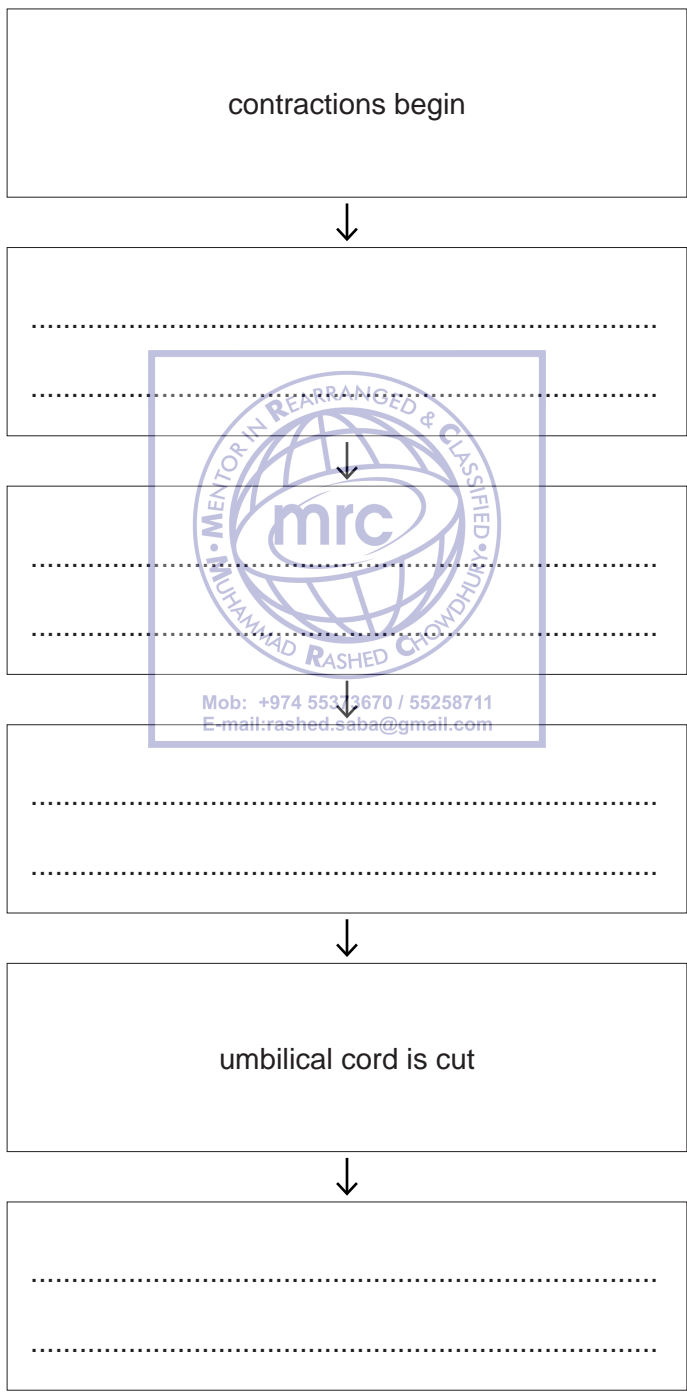
(b) The list describes six stages in the birth of a baby.

They are **not** in the correct order.

- amniotic sac bursts**
- baby passes down vagina**
- cervix dilates**
- contractions begin**
- placenta delivered**
- umbilical cord is cut**

Complete the boxes by writing the descriptions of the stages in the correct order.

Two of the stages have been completed for you.



[3]

[Total: 4]

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