Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

BIOLOGY **0610/33**

Paper 3 Theory (Core) **May/June 2017**

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 **19** printed pages and **1** blank page.

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CAMBRIDGE International Examinations

1 **(a)** Leaves play an important part in plant nutrition.

View solution

(i) Name the process plants use to make carbohydrates such as simple sugars.

.....[1]

View solution

(ii) State the word equation for this process.

.....[2]

View solution

(iii) Suggest **one** way that leaves are adapted to make carbohydrates.

.....[1]

(b) Fig. 1.1 shows whole leaves from five different trees.

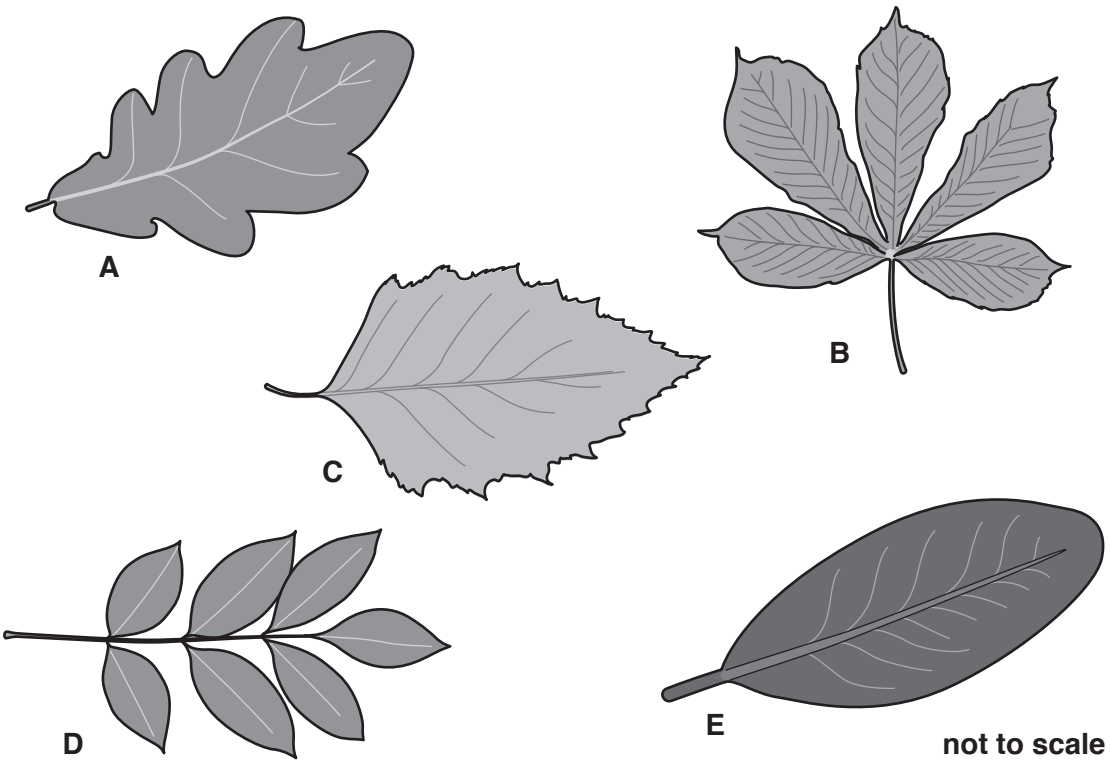

Fig. 1.1

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Fig. 1.2 is a key which can be used to identify the five leaves shown in Fig. 1.1.

The key shows the scientific names of the five trees that the leaves came from.

In this key Box 4 is missing.

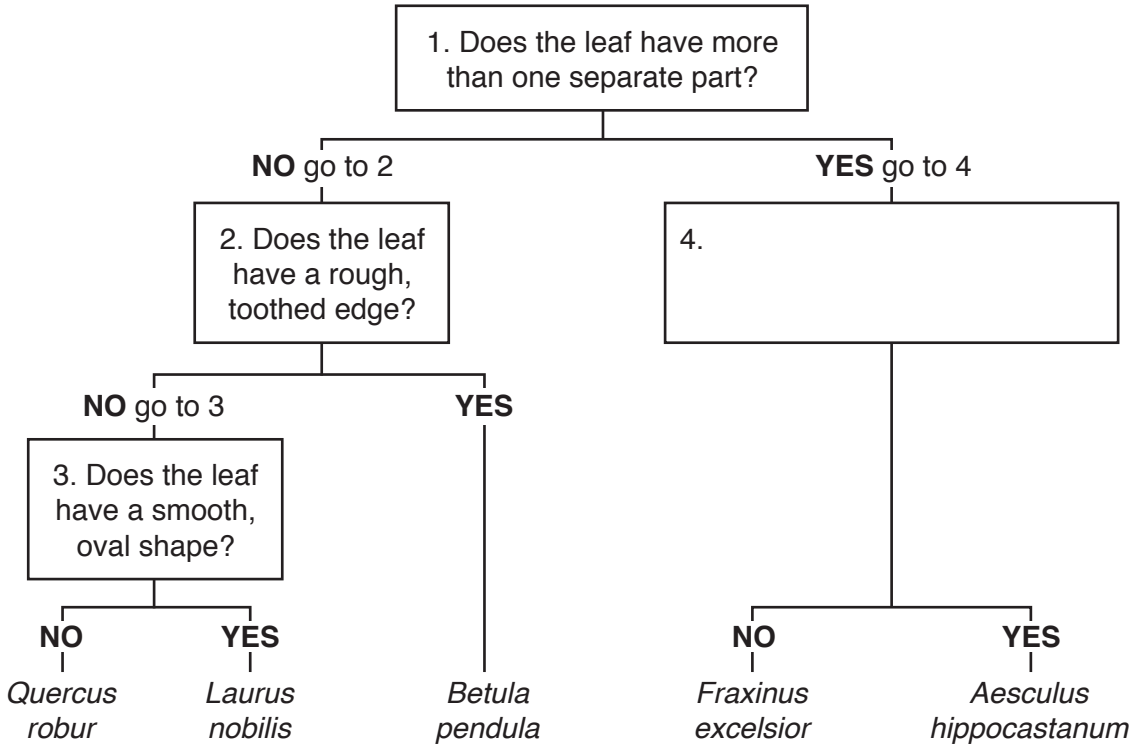

Fig. 1.2

View solution

(i) Use the key to identify the five leaves shown in Fig. 1.1.

The leaf labelled **B** has been identified for you.

Complete Table 1.1 by writing the correct letter next to the Latin name of each type of leaf.

Table 1.1

name of tree	letter
Aesculus hippocastanum	**B**
Betula pendula	
Fraxinus excelsior	
Laurus nobilis	
Quercus robur	

[3]

(ii) Suggest a suitable question which could be used to distinguish between the leaves of *Aesculus hippocastanum* and *Fraxinus excelsior*.

Write your answer in Box 4 on Fig. 1.2. [1]

[Total: 8]

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2 Fig. 2.1 shows some of the external features of the human heart.

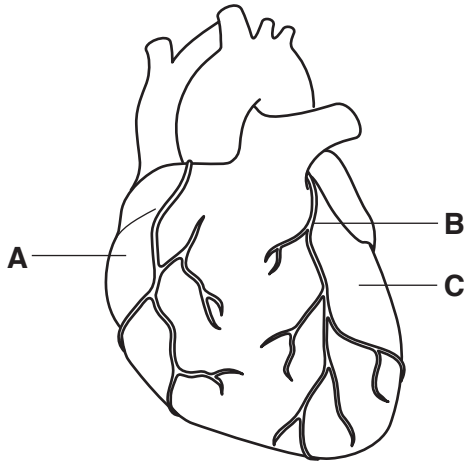

Fig. 2.1

(a) (i) State the function of the heart.

View solution

.....[1]

(ii) Name the tissue that makes up most of the heart wall labelled **C** on Fig. 2.1.

View solution

.....[1]

(iii) State **two** ways that the activity of the heart can be monitored.

View solution

1 .....

2 .....

[2]

(b) (i) Identify blood vessel **B** on Fig. 2.1.

View solution

Draw a circle around your answer.

aorta **coronary artery** **pulmonary artery**

pulmonary vein **vena cava**

[1]

(ii) Blockage of this blood vessel can cause serious damage to the heart.

View solution

Describe **one** factor that can increase the risk of developing a blockage in this blood vessel.

.....[1]

(iii) Name the type of blood vessel that carries blood

View solution

away from the heart .....

towards the heart .....

[1]

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(c) (i) Deoxygenated blood from the body enters the part of the heart labelled **A** on Fig. 2.1.

State the name of part **A** .....[1]

(ii) The inside of the heart contains a number of valves.

View solution

State the function of these valves.

.....

.....[1]

(iii) State the name of the structure which separates the two sides of the heart.

.....[1]

[Total: 10]

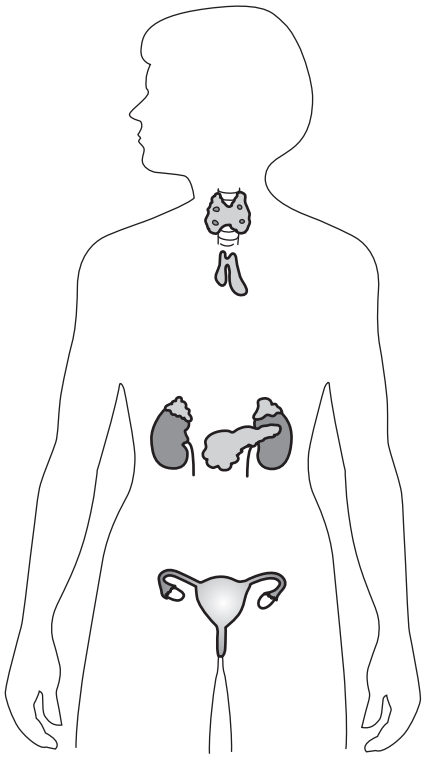
3 Fig. 3.1 shows some of the endocrine glands of a woman.

The boxes contain the names of three substances made by the endocrine glands.

(a) (i) Which group of substances do adrenaline, insulin and oestrogen belong to?

.....[1]

View solution



adrenaline

insulin

oestrogen

Fig. 3.1

(ii) On Fig. 3.1 draw three straight lines to join each of the names in the boxes to the endocrine gland that releases the substance.

[3]

(iii) State the name of the gland which produces:

insulin .....

oestrogen .....

[2]

(iv) State the function of:

insulin .....

.....

oestrogen .....

.....

[2]

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(b) Describe **two** effects that adrenaline has on the body.

1 .....

.....

2 .....

.....

[2]

[Total: 10]

View solution

4 This question is about chemical digestion.

(a) Before food can be absorbed into the body it needs to be digested.

View solution

Define the term *chemical digestion*.

.....

.....

.....[2]

(b) Pasta contains starch, which is a carbohydrate.

View solution

(i) Name the enzyme that breaks down starch.

.....[1]

(ii) Name the substance formed when starch is digested.

View solution

.....[1]

(c) Fig. 4.1 is a partially labelled diagram of the human alimentary canal.

Some parts of the alimentary canal have been labelled but have not been named.

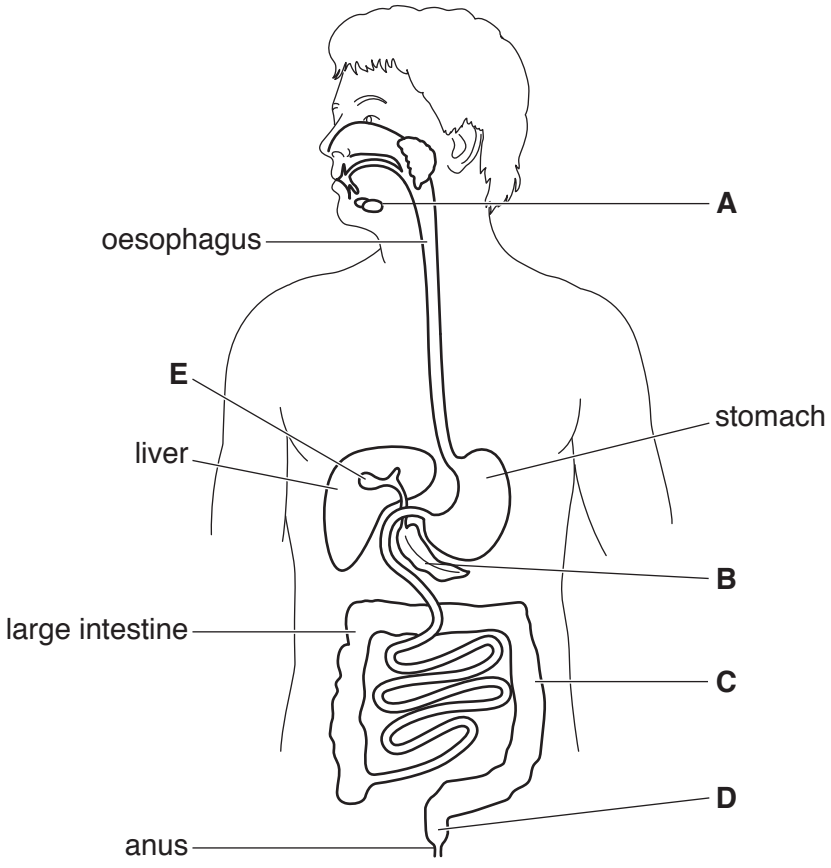

Fig. 4.1

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(i) Identify the **two** letters on Fig. 4.1 that show the structures which produce enzymes that break down starch.

View solution

1 .....

2 .....

[2]

(ii) State the name of the part of the alimentary canal responsible for the absorption of digested food.

.....[1]

(d) State **two** functions of the stomach.

View solution

1 .....

2 .....

[2]

[Total: 9]

5 Pectinase is an enzyme which is used to extract juice from fruits such as apples.

Fig. 5.1 shows the volume of juice extracted from two equally sized samples of crushed apple over 16 minutes.

Sample **A** contained pectinase and Sample **B** contained the same volume of water.

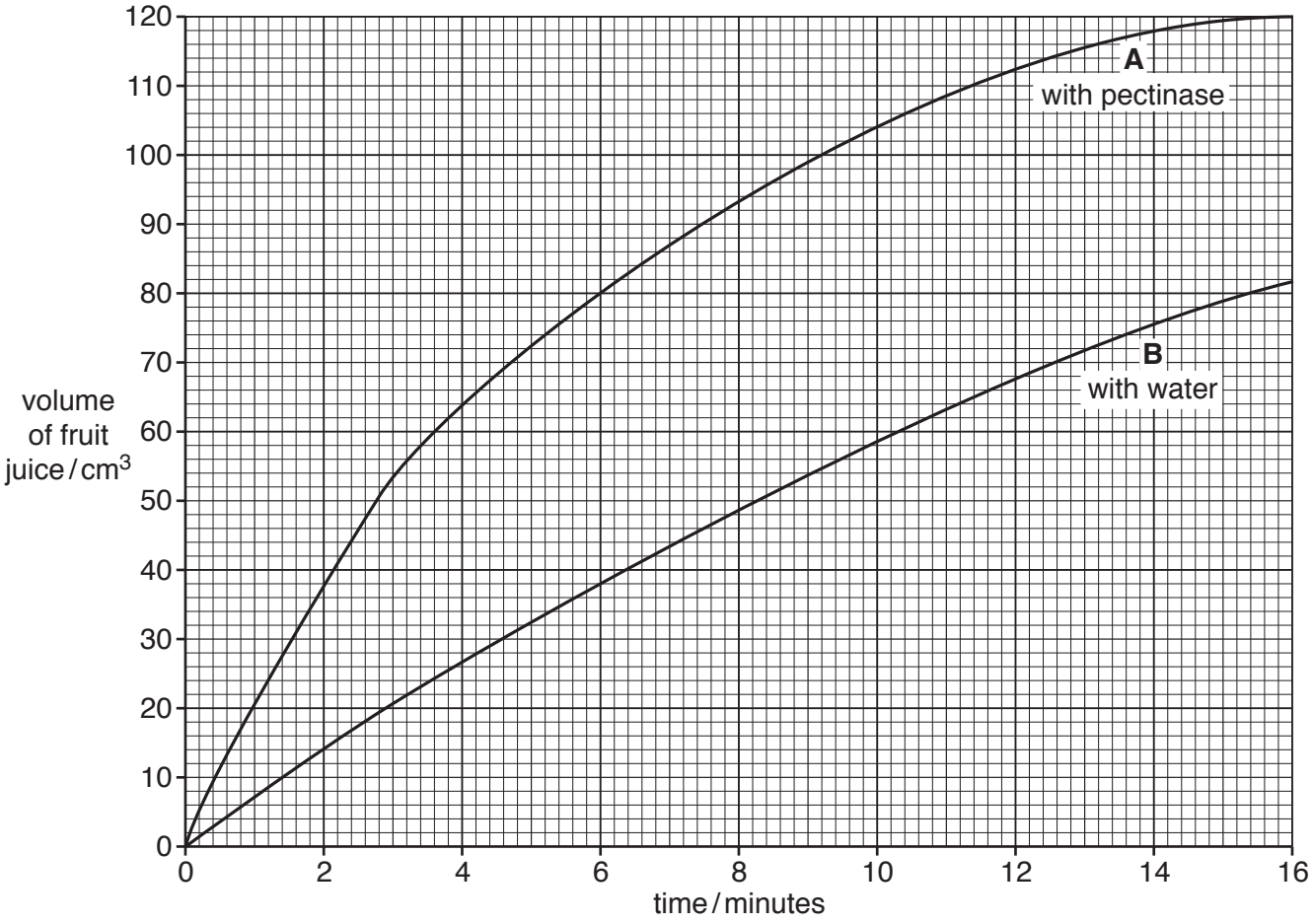

Fig. 5.1

(a) (i) How much juice had been extracted from the apples in Sample **A** after 2 minutes?

..... cm^3 [1]

(ii) How much longer does it take for Sample **B** to produce this amount of juice?

View solution

Show your working.

..... [1]

(iii) State **two** advantages to the food industry of using pectinase in juice extraction.

1 .....

.....

2 .....

.....

[2]

(b) Yeast can be added to the apple juice to make cider by anaerobic respiration.

View solution

(i) Define the term *anaerobic respiration.*

.....

.....

.....[2]

(ii) As well as making alcohol, the anaerobic respiration of yeast can be used to make other useful products.

View solution

State the name of **one** of these products.

.....[1]

(iii) Yeast can also respire aerobically.

View solution

State **two** ways aerobic respiration differs from anaerobic respiration in yeast.

1 .....

.....

2 .....

.....

[2]

[Total: 9]

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6 Fig. 6.1 shows a plant growing in the **dark**.

The pot has fallen over and has been left on its side for a few days.

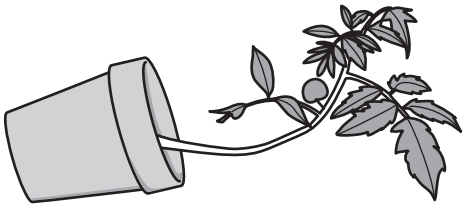

Fig. 6.1

(a) Describe how lying on its side has affected the growth of the plant.

View solution

.....

.....[1]

(b) The stem of the plant in Fig. 6.1 is responding to an external stimulus.

View solution

(i) State the name of this stimulus.

.....[1]

(ii) State the name of this type of plant response.

.....[1]

View solution

(c) Plants also respond to other stimuli.

View solution

This is shown in Fig. 6.2.

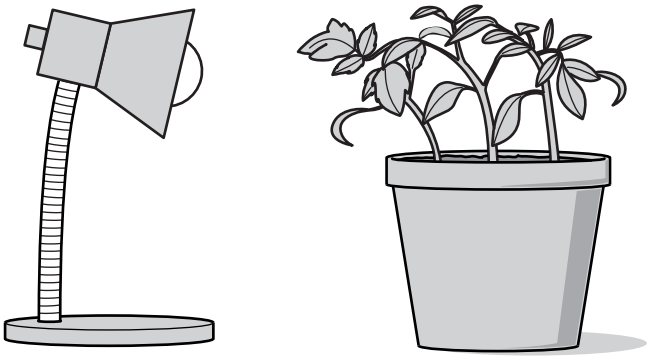

Fig. 6.2

(i) State the name of this response.

.....[1]

(ii) Explain why the shoots are all bent over to the left **and** how this response is important for the plant.

.....

.....

.....

.....

.....

.....

.....[3]

[Total: 7]

View solution

7 **(a)** There are two types of cell division, meiosis and mitosis.

View solution

Cells produced by each type of division have different characteristics and functions.

Complete Table 7.1 by placing a tick in two of the boxes in each row to show the characteristics and functions of the cells made by each type of cell division.

Tick only four boxes.

Table 7.1

type of cell division	characteristics of cells		uses	
	genetically different	genetically similar	to produce gametes	for growth and repair
meiosis				
mitosis				

[2]

View solution

(b) One way of producing more potatoes is by planting tubers.
Potato tubers are produced by asexual reproduction.

Another way of producing potato plants is by planting seeds.
Seeds are a result of sexual reproduction.

Fig. 7.1 shows a potato plant.

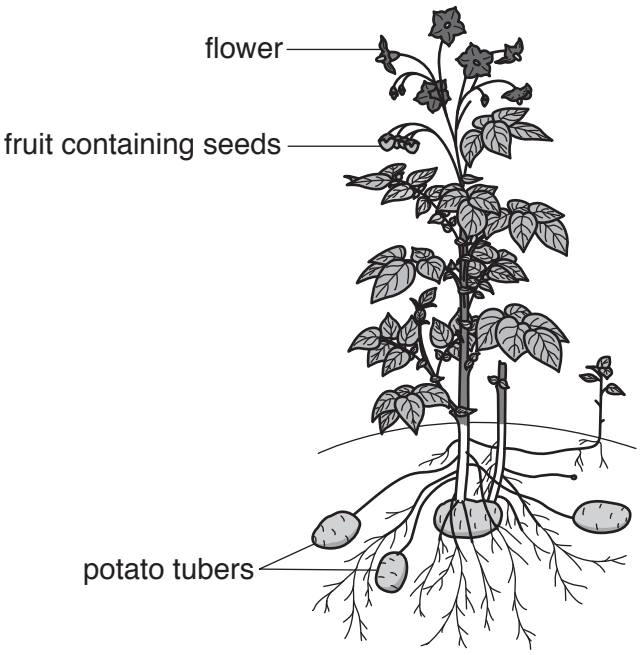

Fig. 7.1

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A farmer uses selective breeding to produce a new variety of potato.

Describe the stages in selective breeding.

.....

.....

.....

.....

.....

.....

.....[3]

(c) Genetic engineering can also be used to provide new varieties of crop plants.

View solution

Using an example, explain what is meant by genetic engineering.

.....

.....

.....

.....

.....

.....

.....

.....

.....[4]

(d) State **two** ways of improving the yield of crops, **other than** selective breeding or genetic engineering.

1 .....

2 .....

[2]

[Total: 11]

View solution

8 **(a)** The theory of natural selection explains how one species can gradually evolve into a new species.

View solution

The statements **A** to **F** describe six stages in the process of natural selection.

The stages are **not** in the correct order.

A competition for resources

B passing on of their alleles to the next generation

C production of many offspring

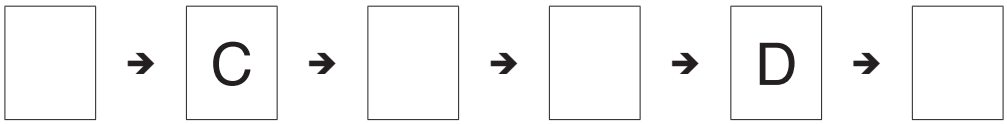
D reproduction by individuals that are better adapted to the environment than others

E struggle for survival

F variation within populations

(i) Arrange the stages in the correct order and then complete the flow chart by writing the letters in the four empty boxes.

Two of the stages have been filled in for you.



[3]

(ii) Statement **B** mentions alleles. An allele is a version of a gene.

View solution

State **one** way new alleles are formed.

.....[1]

(iii) State **one** factor that can increase the rate at which new alleles are formed.

.....[1]

View solution

(b) Fig. 8.1 shows four animals with different adaptive features.

View solution

They are all mammals.

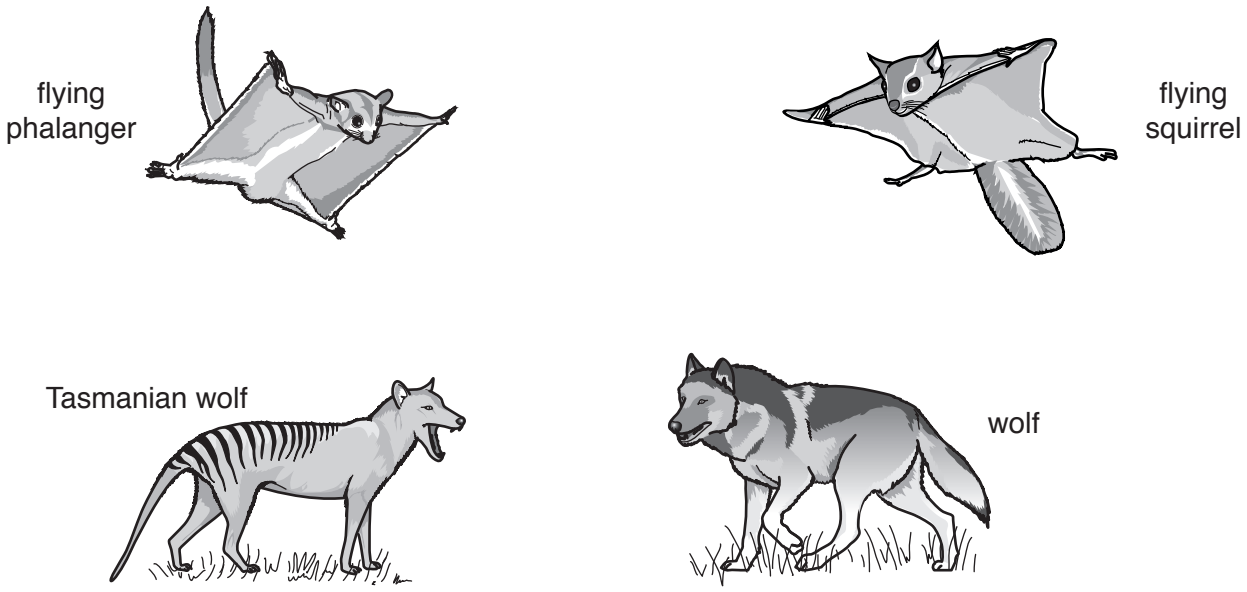


Fig. 8.1

(i) Define the term *adaptive features.*

.....

.....

.....[2]

(ii) Describe **two** features, visible in Fig. 8.1, which show that all of these animals are mammals.

1 .....

.....

2 .....

.....

[2]

(iii) Describe **one** feature of mammals that is **not** visible in Fig. 8.1.

.....[1]

[Total: 10]

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9 Fig. 9.1 shows a person donating blood.

Blood is split into its separate components and used to treat different medical conditions.

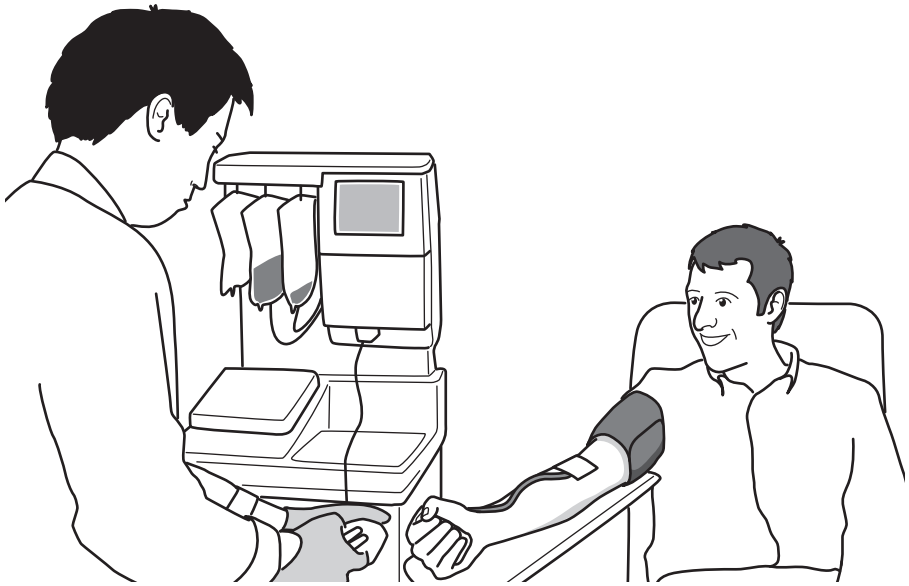

Fig. 9.1

(a) Table 9.1 shows the components of blood and the medical conditions that they are used to treat.

View solution

The boxes on the left show the components of blood.

The boxes on the right show the medical conditions that they are used to treat.

Draw a straight line from each component of the blood to the medical condition that it is used to treat.

Table 9.1

components of blood	medical condition
plasma	to help patients whose blood does not clot easily
platelets	to treat patients with burns who have lost body fluids
red blood cells	to treat patients who have low immunity
white blood cells	to treat patients with low levels of haemoglobin

[3]

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(b) (i) Describe **two ways** that the structure of a red blood cell differs from the structure of a white blood cell.

1 .....

2 .....
[2]

(ii) Suggest why it is important for blood to form a clot if a blood vessel is cut.

.....[1]

[Total: 6]

View solution

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