Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

BIOLOGY **0610/21**

Paper 2 Core **October/November 2015**

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.

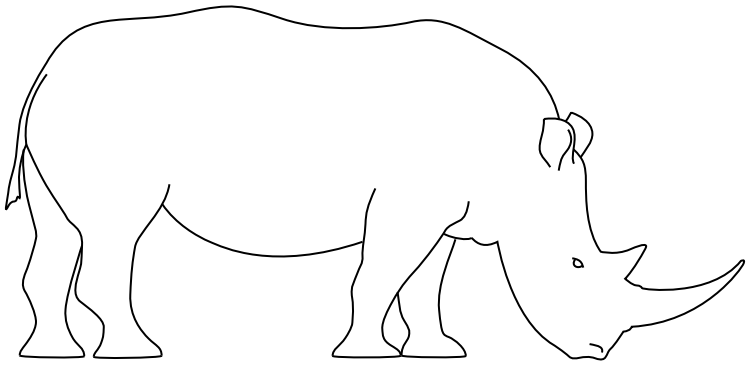
This document consists of **18** printed pages and **2** blank pages.

© UCLES 2015

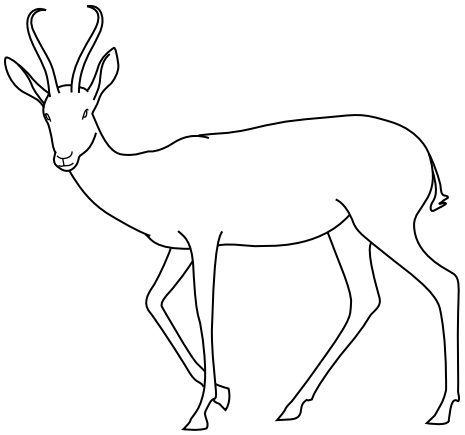
CAMBRIDGE International Examinations

1 Fig. 1.1 shows five different mammals.

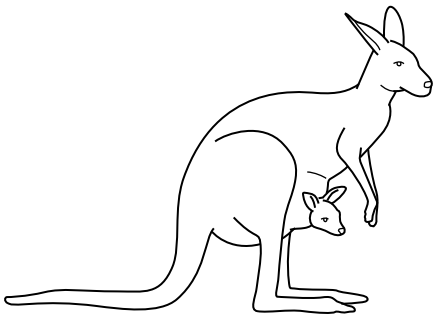
View solution



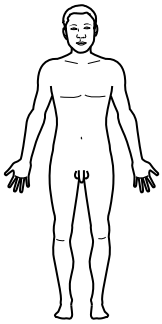
A



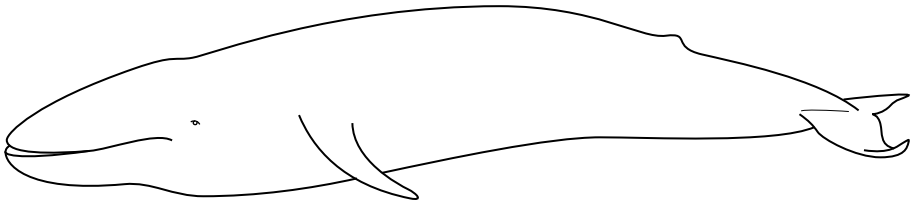
B



C



D



E

not drawn to scale

Fig. 1.1

© UCLES 2015

Use the key to identify the mammals shown in Fig. 1.1.

Write the letter of each species (**A** to **E**) in the correct box beside the key.

key

				letter
1	(a)	has visible external ears	go to 2	
	(b)	does not have visible external ears	*Eschrichtius robustus*	
2	(a)	stands on four legs	go to 3	
	(b)	stands on two legs	go to 4	
3	(a)	has two horns between its ears	*Antidorcas marsupialis*	
	(b)	has two horns in front of its ears	*Diceros bicornis*	
4	(a)	has ears placed on top of head	*Macropus rufus*	
	(b)	has ears placed at the side of head	*Homo sapiens*	

[4]

[Total: 4]

© UCLES 2015

2 **(a)** Define the term *homeostasis*.

View solution

.....

.....

.....

.....[2]

(b) Fig. 2.1 shows a section through the skin.

View solution

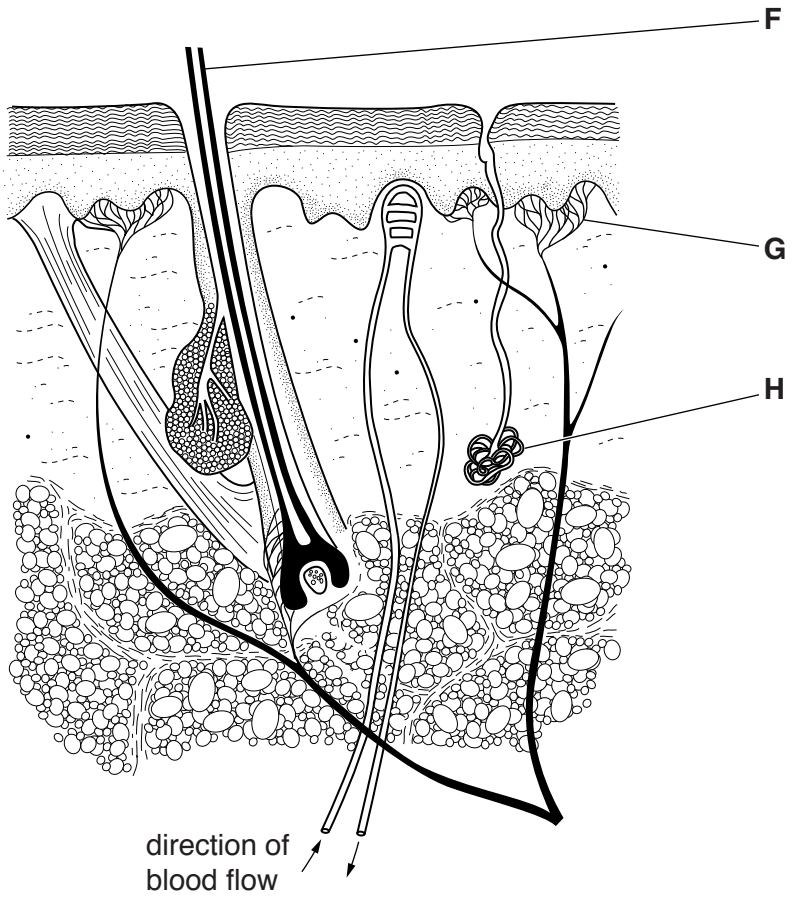


Fig. 2.1

(i) Name the structures **F**, **G** and **H**, shown on Fig. 2.1.

F .....

G .....

H .....

[3]

Fig. 2.2 shows the same section through the skin.

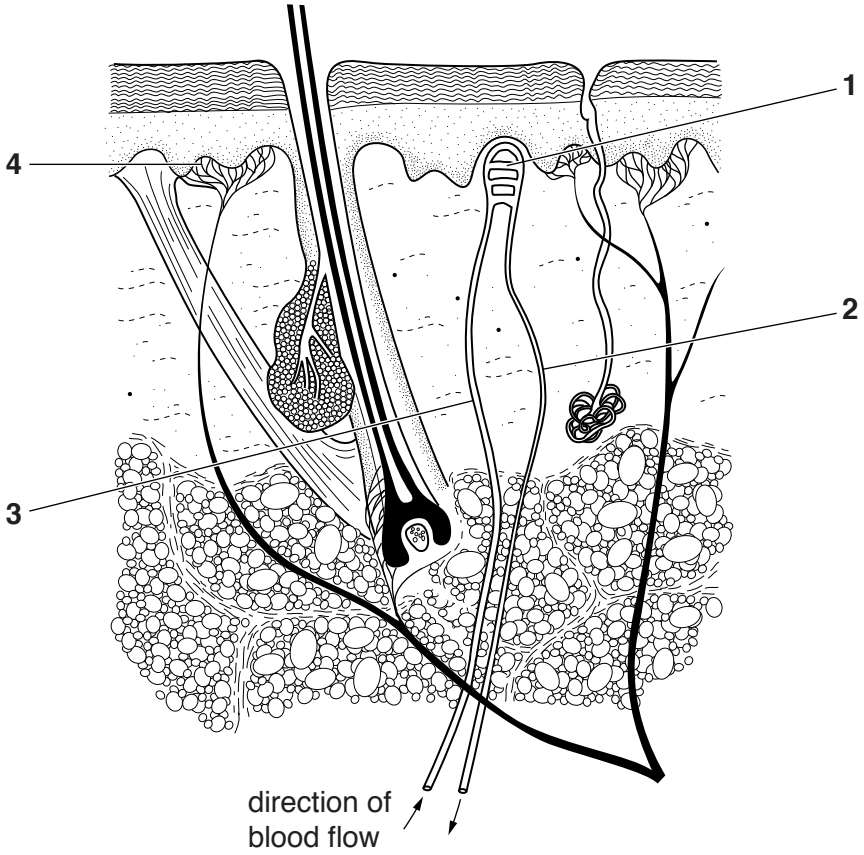


Fig. 2.2

(ii) Using Fig. 2.2, state which numbered part of the skin, **1** – **4**, has the highest temperature on a cold day.

part number ..... [1]

View solution

(c) When the body temperature rises above 37 °C, two changes occur in the skin to help the temperature return to normal:

View solution

- vasodilation
- increased sweating.

Fig. 2.3 shows a simplified diagram of the skin.

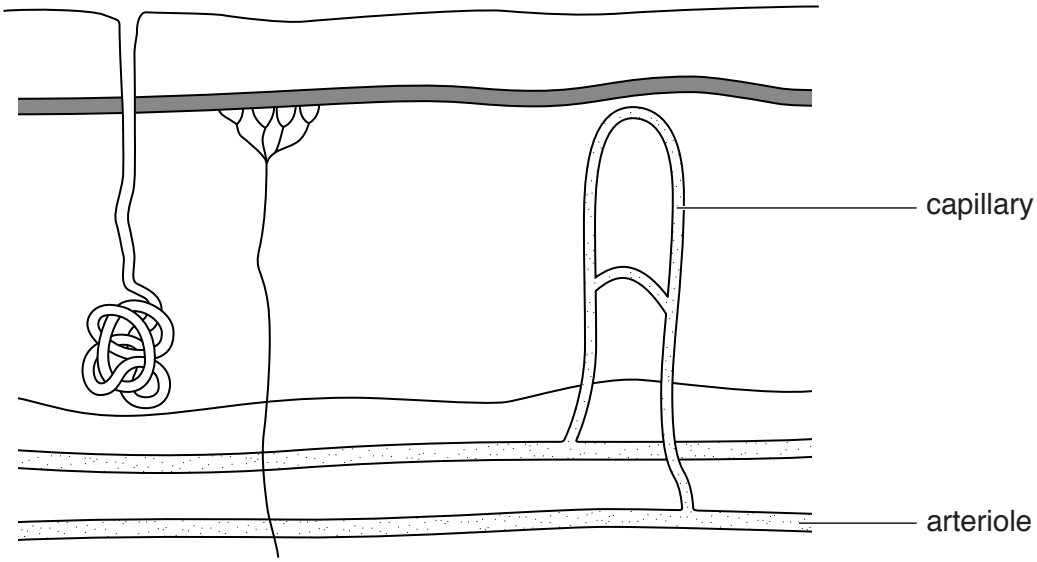


Fig. 2.3

(i) Describe what happens in vasodilation, and explain how this helps to lower body temperature.

Use Fig. 2.3 to help with your explanation.

.....

.....

.....

.....

.....[3]

(ii) Explain how increased sweating helps to lower the body temperature.

.....

.....

.....

.....

.....

.....

.....

.....

.....[3]

(iii) State **two** methods, other than reduced sweating, that the body uses to stop the body temperature falling below normal on a cold day.

1 .....

2 .....

[2]

(d) Name the part of the body which coordinates the changes in the skin to keep the body temperature at 37 °C.

.....[1]

[Total: 15]

View solution

3 The boxes on the left contain some genetic terms.

The boxes on the right contain definitions of genetic terms.

Draw **one** straight line to join each term to its correct definition.

Draw only five lines.

One example has been done for you.

View solution

term	definition
allele	a thread of DNA, made up of a string of genes
chromosome	a length of DNA that codes for a specific protein
diploid	an alternative form of a gene
gene	containing two sets of chromosomes
haploid	transmission of genetic information from generation to generation
inheritance	the physical features of an organism due to both its genotype and its environment
	containing a single set of unpaired chromosomes

[5]

[Total: 5]

4 Fig. 4.1 shows a seed as it is starting to germinate and the same seed several days later.

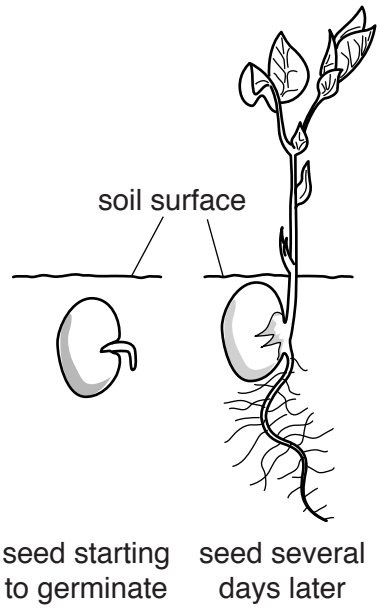


Fig. 4.1

(a) Explain how growth differs from development.

View solution

Use information from Fig. 4.1 to help with your explanation.

.....

.....

.....

.....

.....

.....

.....

.....

.....[4]

(b) State **three** environmental conditions that all seeds need before they can germinate.

View solution

1 .....

2 .....

3 .....

[3]

[Total: 7]

© UCLES 2015

5 Fig. 5.1 shows the reproductive system of a man.

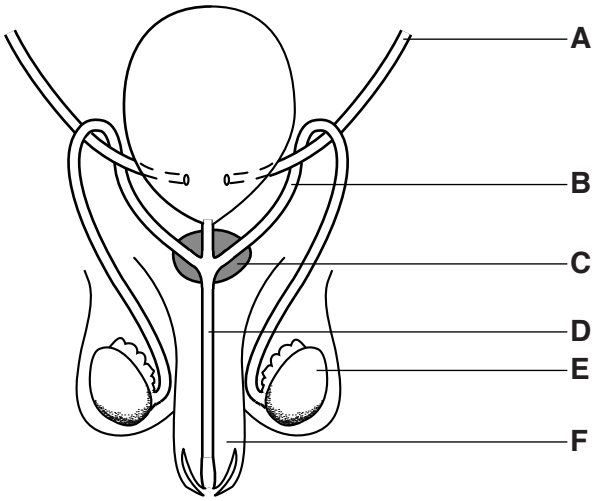


Fig. 5.1

(a) The functions of some of the parts of the reproductive system of a man are given in Table 5.1. Complete Table 5.1 using information from Fig. 5.1. One row has been done for you:

View solution

Table 5.1

function	letter from Fig. 5.1	name
produces fluid for sperm to swim in	**C**	prostate gland
produces sperm and testosterone		
introduces sperm into the female body		
carries sperm or urine		

[6]

(b) (i) Some men have an operation called a vasectomy. This involves cutting the sperm ducts. Place an **X** on Fig. 5.1 to show where the sperm duct would be cut. [1]

(ii) State why this operation is carried out.

View solution

.....

.....[1]

[Total: 8]

6 Fig. 6.1 shows a human kidney and the ureter attached to it.

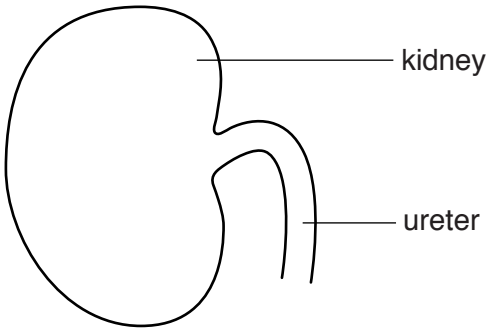


Fig. 6.1

(a) Two other tubes are attached to the kidney, but are not shown on Fig. 6.1.

View solution

Name these two tubes.

1 .....

2 .....

[2]

(b) Kidneys excrete urea.

View solution

State **one** other substance that is excreted by the kidneys.

.....[1]

(c) **(i)** State where urea is formed.

View solution

.....[1]

(ii) Explain why urea has to be produced.

View solution

.....

.....

.....

.....

.....[2]

(iii) State how urea travels to the kidney.

View solution

.....

.....

.....[1]

[Total: 7]

© UCLES 2015

BLANK PAGE

© UCLES 2015

7 Fig. 7.1 shows part of the carbon cycle.

The arrows represent the processes that take place in the carbon cycle.

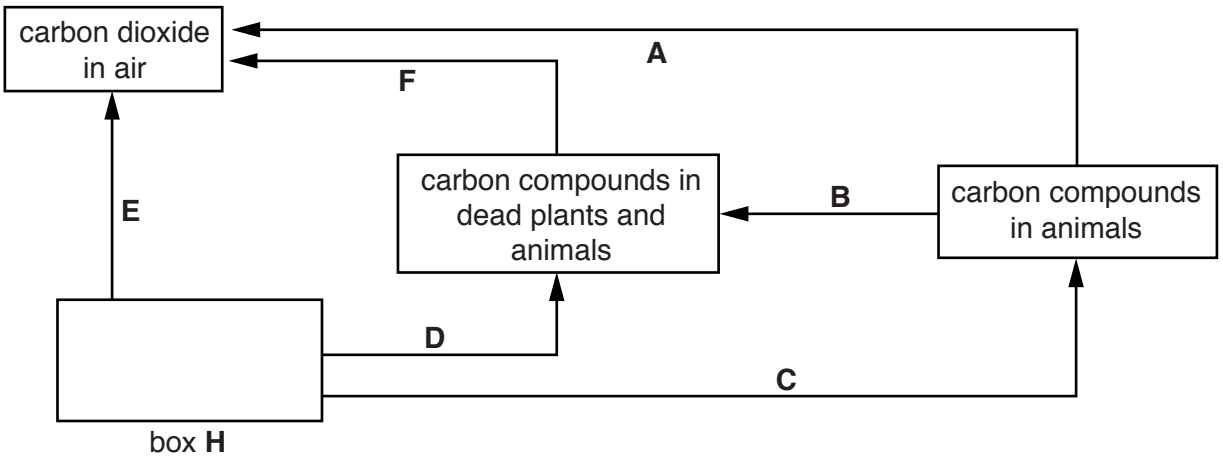


Fig. 7.1

View solution

(a) (i) Complete Fig. 7.1 by filling in box **H**. [1]

(ii) State the process represented by letter **C**. View solution

.....[1]

(iii) Draw a line with an arrow on Fig. 7.1 to represent photosynthesis. View solution

Label this line **G**. [1]

(iv) State the process represented by letter **B**. View solution

.....[1]

(b) (i) State which **two** letters represent respiration. View solution

.... [2]

(ii) Write the word equation for aerobic respiration. View solution

.....[2]

(iii) Explain why every living cell has to carry out respiration. View solution

.....

.....

.....

.....

.....[2]

[Total: 10]

© UCLES 2015

8 **(a)** Explain why food has to be digested.

.....

.....

.....

.....

.....

.....

.....[3]

Fig. 8.1 shows a section through the human body.

View solution

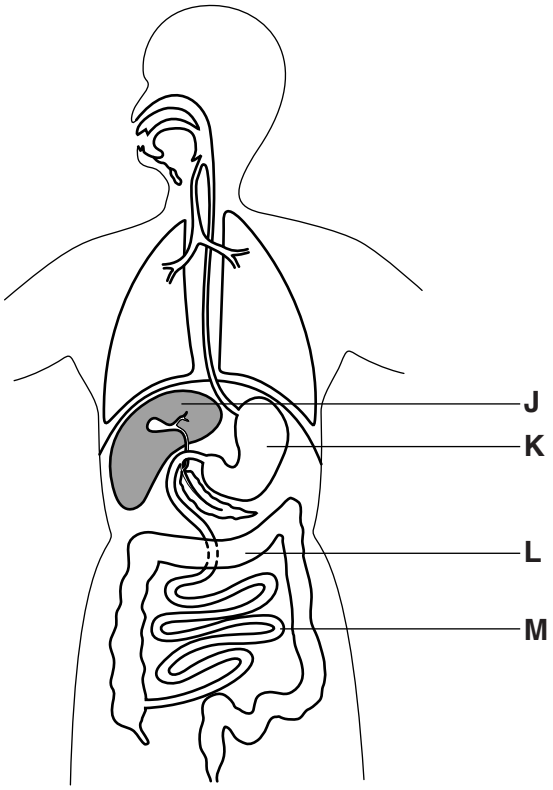


Fig. 8.1

(b) Identify the structures labelled on Fig. 8.1.

View solution

Write your answers in Table 8.1.

Table 8.1

structure	name
J	
K	
L	
M	

[4]

(c) In a medical investigation the number of villi in four people was compared. The results given in Table 8.2 show the average number of villi present in 1 cm^2 of ileum wall.

View solution

Table 8.2

person	average number of villi per cm^2
P	4200
Q	4500
R	3500
S	3250

(i) Calculate the difference in the number of villi between person **P** and person **S**.

difference = ... per cm^2 [1]

(ii) Further investigations showed that person **Q** could absorb digested food more rapidly than the other people.

View solution

Use the information in Table 8.2 to explain this result.

.....

.....

.....

.....

.....

.....[3]

[Total: 11]

© UCLES 2015

9 Transpiration occurs in plants.

(a) Explain what is meant by the term *transpiration*.

View solution

.....

.....

.....

.....

.....

.....

.....[3]

(b) Fig. 9.1 shows a healthy plant and its appearance three hours later when it has started to wilt.

View solution

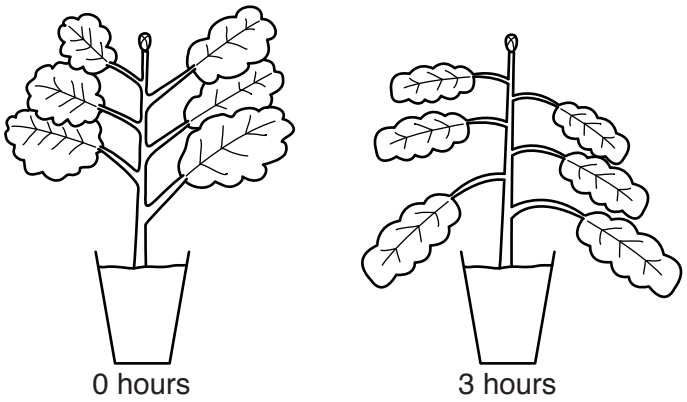


Fig. 9.1

State and explain **two** changes a student could make to the environment of the plant that would stop it wilting any further.

change to the environment .....

explanation .....

.....

.....

change to the environment .....

explanation .....

.....

.....

[4]

[Total: 7]

Question 10 starts on page 18.

10 Some animals were introduced into a new habitat.

Fig. 10.1 shows how the number of animals in the population changed with time.

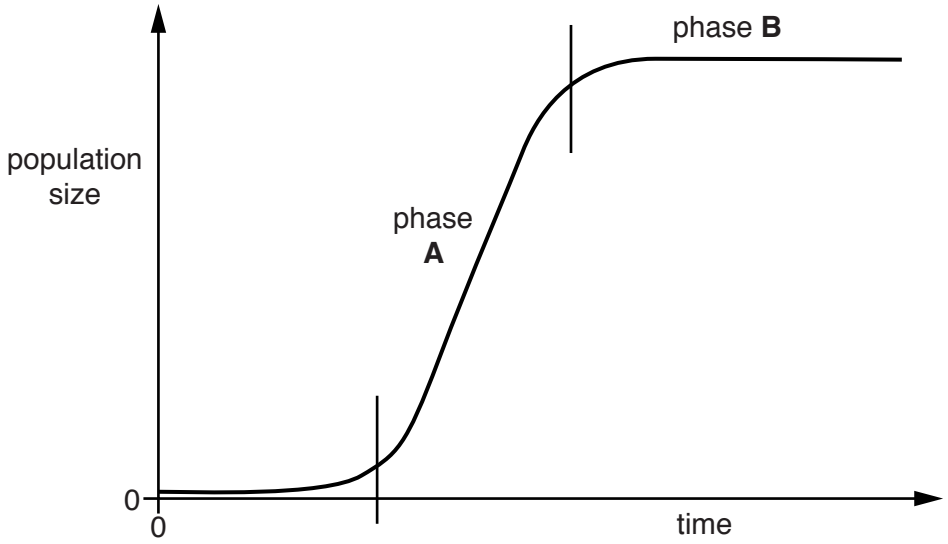


Fig. 10.1

(a) Name phase **A** and phase **B** of the population growth curve shown in Fig. 10.1.

View solution

phase **A** .....

phase **B** ..... [2]

(b) Fig. 10.2 shows the human population growth curve since the year 1 A.D.

View solution

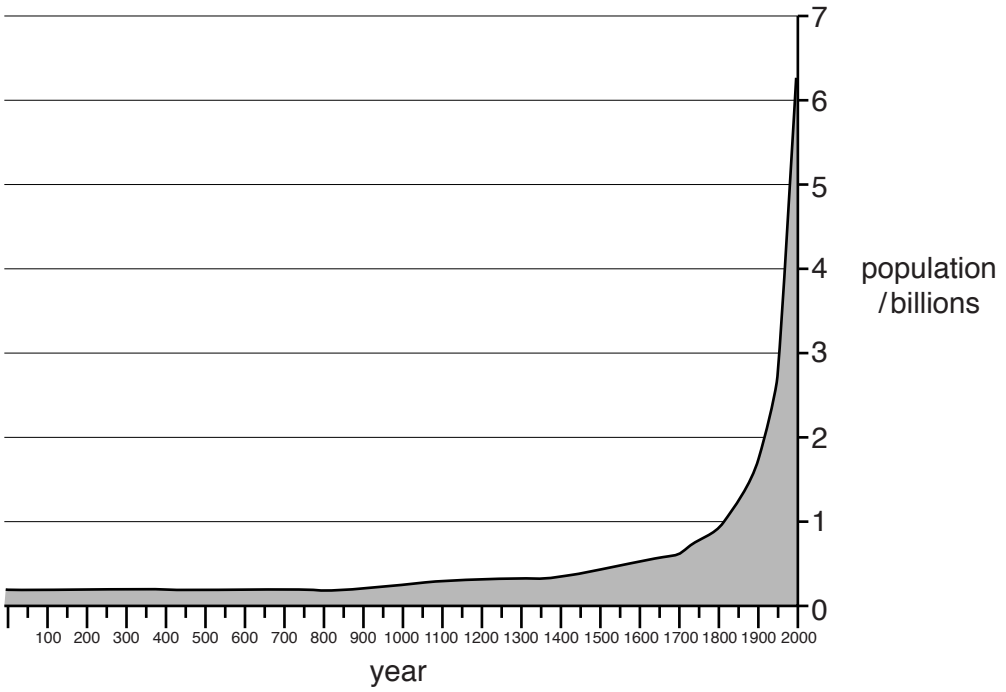


Fig. 10.2

(i) State **and** explain how the human population growth curve is different to the growth curve in Fig. 10.1.

.....

.....

.....

.....

.....

.....

.....[3]

(ii) Suggest **one** social implication that might arise from the current size of the human population.

.....

.....

.....[1]

[Total: 6]

© UCLES 2015

BLANK PAGE

View solution

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced online in the Cambridge International Examinations Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at www.cie.org.uk after the live examination series.

Cambridge International Examinations is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.

© UCLES 2015