



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
General Certificate of Education Ordinary Level

CANDIDATE  
NAME

CENTRE  
NUMBER

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CANDIDATE  
NUMBER

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**HUMAN AND SOCIAL BIOLOGY**

**5096/22**

Paper 2

**May/June 2010**

**2 hours**

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.  
Do not use staples, paper clips, highlighters, glue or correction fluid.  
**DO NOT WRITE IN ANY BARCODES.**

**Section A**

Answer **all** questions.  
Write your answers in the spaces provided on the question paper.  
You are advised to spend no longer than 1 hour on Section A.

**Section B**

Answer **all** the questions, including questions 8, 9 and 10 **Either** or 10 **Or**.  
Write your answers to questions 8, 9 and 10 in the spaces provided on the question paper.  
Write an **E** (for Either) or an **O** (for Or) next to the number 10 in the grid below to indicate which question you have answered.

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.

For Examiner's Use	
1	
2	
3	
4	
5	
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7	
<b>Section A sub-total</b>	
8	
9	
10	
<b>Total</b>	

This document consists of **22** printed pages and **2** blank pages.



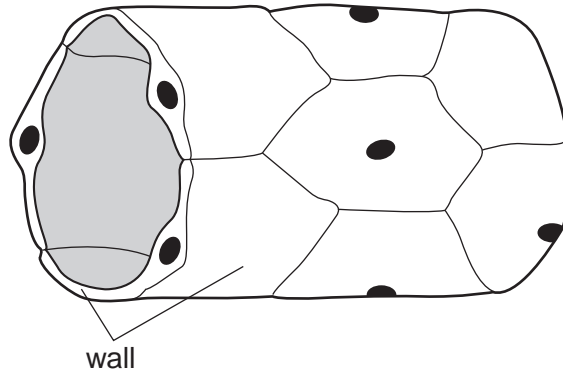
**Section A**

Answer **all** the questions.

Write your answers in the spaces provided.

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1 Fig. 1.1 shows a short length of a capillary.



**Fig. 1.1**

(a) Explain how the wall of the capillary is suited for its functions.

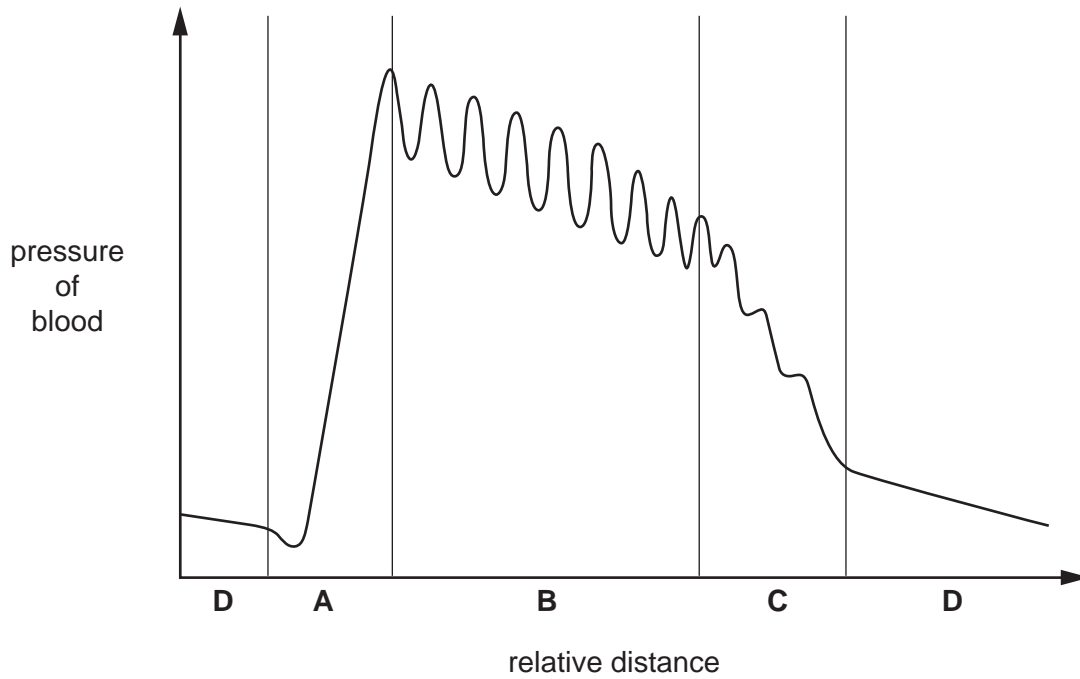
.....

.....

..... [3]

Fig. 1.2 shows the pressure of the blood as it completes one circulation of the body (excluding the lungs).

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**Fig. 1.2**

(b) State which labelled section, **A**, **B**, **C** or **D** of the graph shows the pressure of the blood as it passes through

arteries, .....

capillaries, .....

the heart.....

[3]

(c) Explain how eating foods rich in animal fats and cholesterol can lead to high blood pressure.

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

[2]

Fig. 1.3 shows a view of a human heart cut across two of its chambers.

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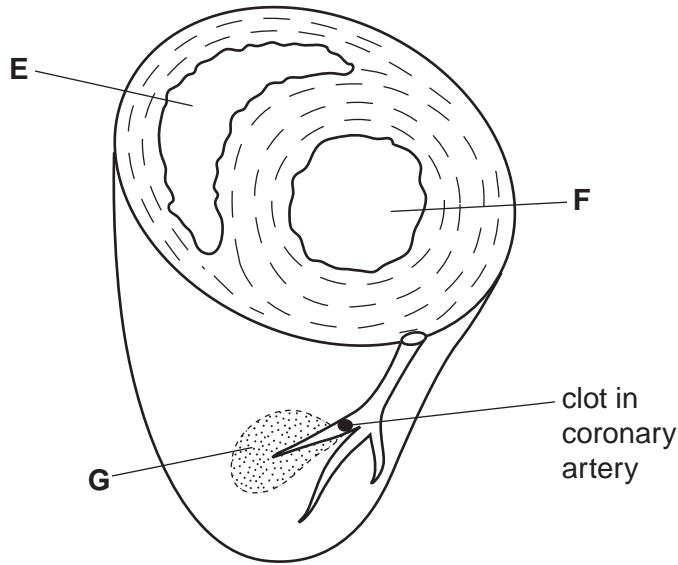


Fig. 1.3

(d) Describe how the structure of the heart ensures that blood flows in one direction only through chamber F.

.....  
.....  
.....  
.....  
..... [3]

- (e) State two ways in which the **composition** of the blood inside chamber **E** differs from that inside chamber **F**.

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Explain the differences.

*difference 1* .....

*explanation* .....

.....

.....

*difference 2* .....

*explanation* .....

.....

..... [4]

- (f) Explain why the clot that has formed in a small branch of the coronary artery shown in Fig. 1.3 has caused cells in area **G** to die.

.....

.....

.....

.....

.....

.....

.....

..... [5]

[Total: 20]

- 2 A student carried out an experiment on the fat content of two different samples of cow's milk, H and I. Fig. 2.1 shows a sequence of steps in the experiment. The pH indicator used is colourless when the pH is 7 or less, and purple when it is over 7.

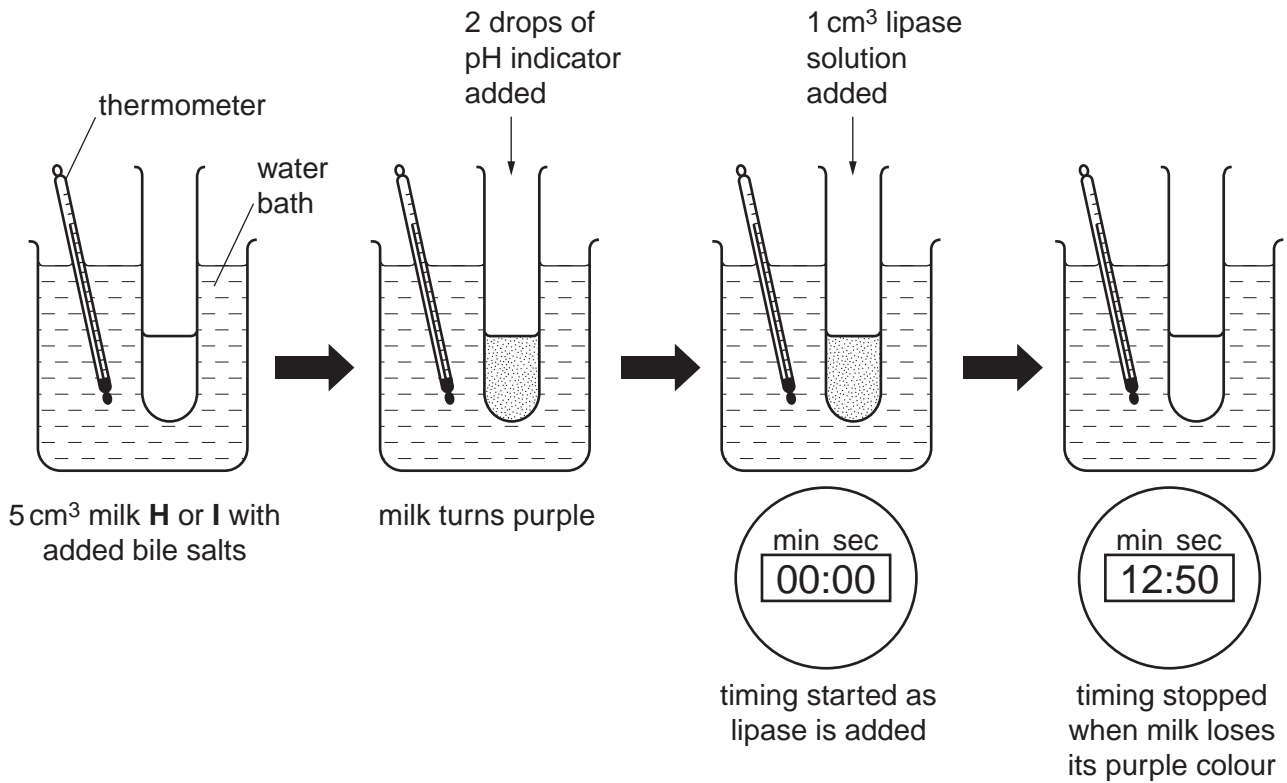


Fig. 2.1

The experiment was carried out at different temperatures. The times taken for the pH indicator to change from purple to colourless are shown in Fig. 2.2.

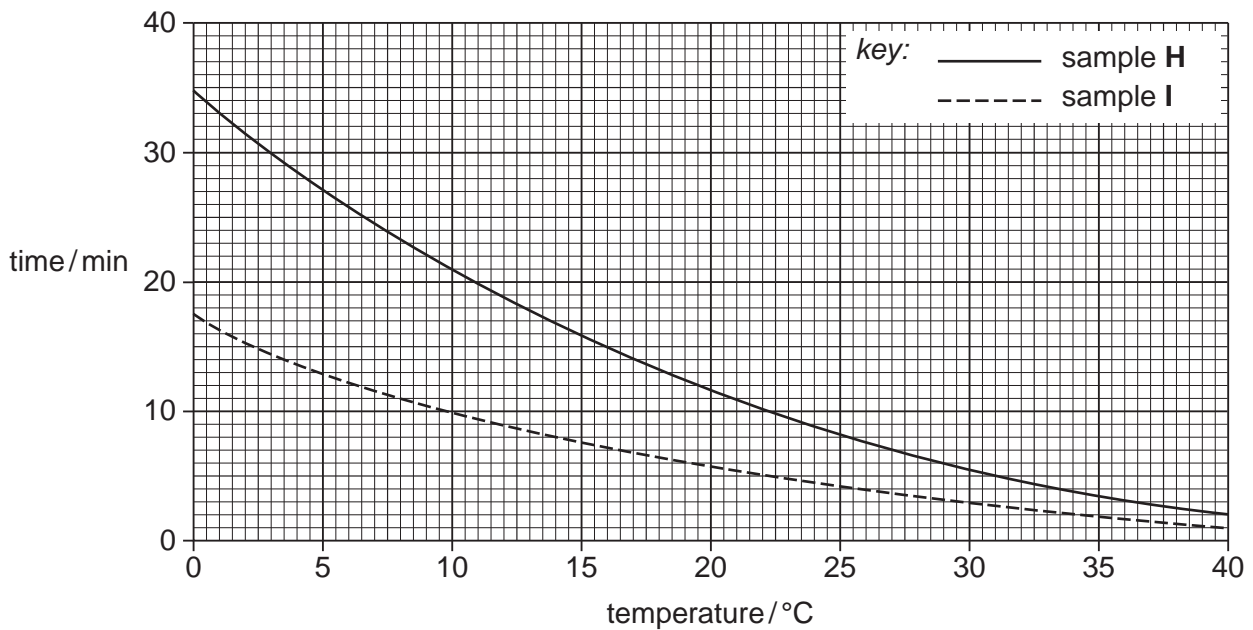


Fig. 2.2

(a) State **one** reason why bile salts were added to the milk.

..... [1]

(b) Explain how the action of lipase caused the indicator to change from purple to colourless.

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

Table 2.3 shows the time taken for the indicator to change from purple to colourless when goat's milk, **J**, was used.

**Table 2.3**

temperature/°C	time taken for indicator to change from purple to colourless/min
8	17
22	7
31	4

(c) (i) Using the information in Fig. 2.2 and Table 2.3, place the three milk samples, **H**, **I** and **J**, in order of their fat content, starting with the **lowest**.

1. .... 2. .... 3. .... [1]

(ii) Explain your answer to (i).

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

[Total: 5]

3 Fig. 3.1 shows the reproductive organs of a woman.

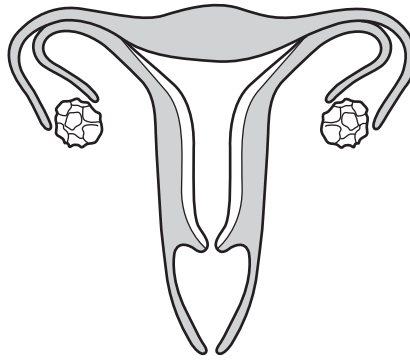


Fig. 3.1

(a) What feature shown on Fig. 3.1 might indicate that this woman is infertile? Explain your answer.

feature .....

explanation .....

.....

..... [2]

Fig. 3.2 shows the thickness of the uterus lining, and the concentration of progesterone in the blood, at different times in another woman's menstrual cycle.

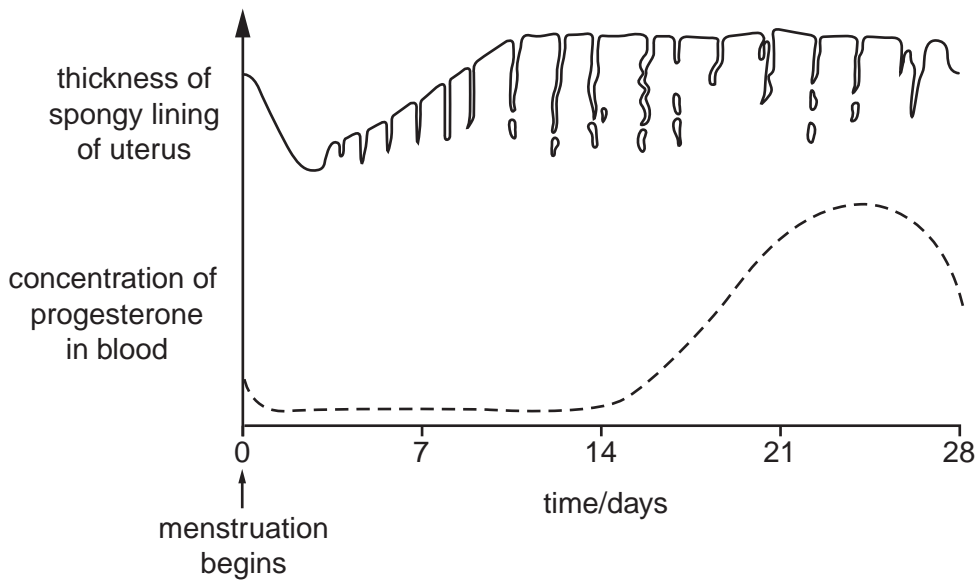


Fig. 3.2



- (b) Using the information on Fig. 3.2, suggest a time when implantation would be likely to be most successful. Explain your answer.

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*time for implantation* .....

*explanation* .....

.....

..... [3]

- (c) On the graph in Fig. 3.2, draw a line to show the concentration of oestrogen for the same woman from day 0 to day 28. [2]

[Total: 7]

4 Fig. 4.1 shows two different models that are often used to demonstrate the actions of muscles used when a person is breathing.

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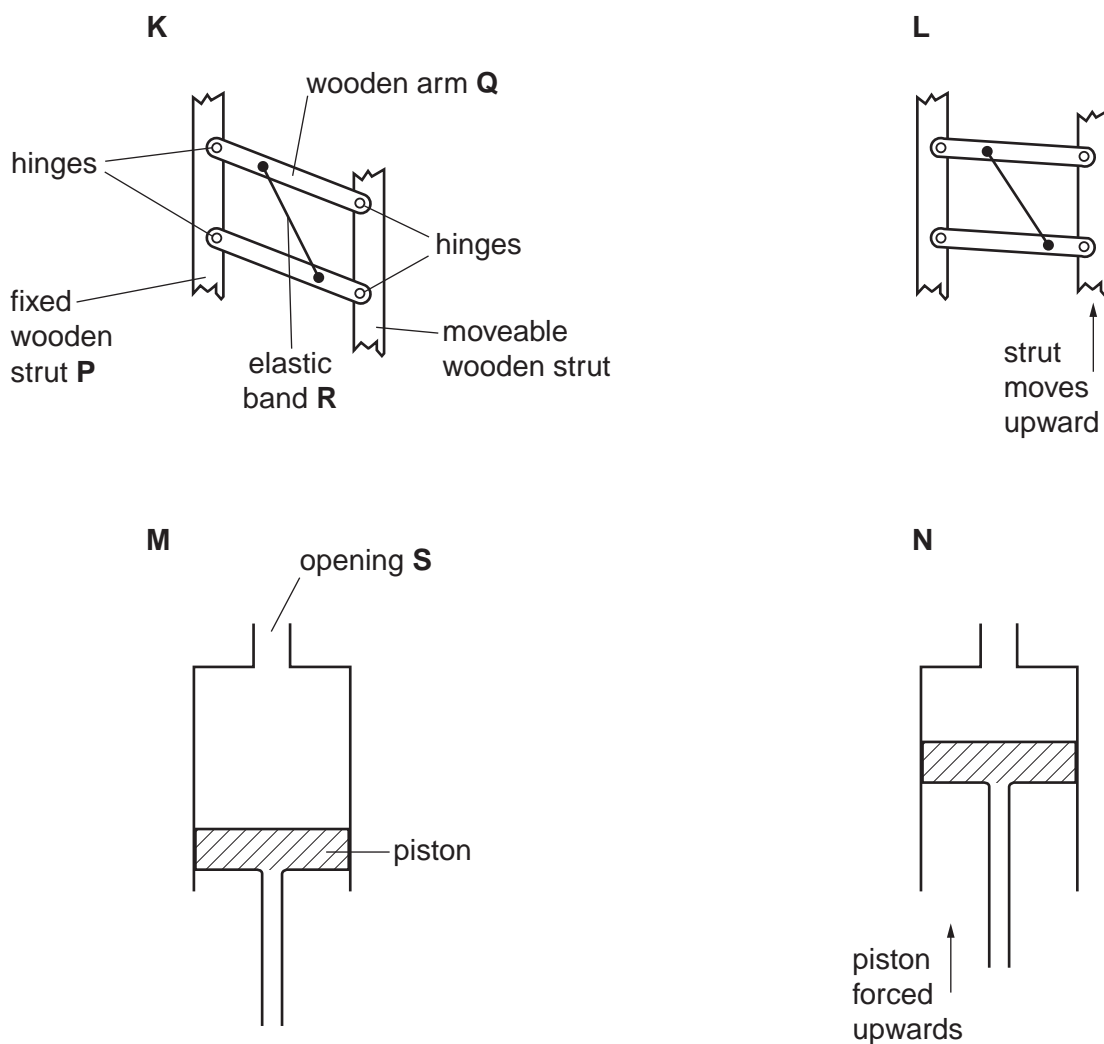


Fig. 4.1

(a) Identify the structures in the human thorax that are represented in Fig. 4.1 by **P**, **Q**, **R** and **S**.

- P** .....
- Q** .....
- R** .....
- S** ..... [2]

(b) Name the muscles whose actions are represented by

- K** and **L**, .....
- M** and **N**. ..... [2]

(c) State which two diagrams, **K**, **L**, **M** or **N**, represent the thorax after breathing out.

1. ....

2. ....

[2]

(d) State **three** ways in which the model shown by **M** and **N** does **not** accurately represent the process of breathing in the person.

1. ....

.....

2. ....

.....

3. ....

..... [3]

[Total: 9]

5 Fig. 5.1 shows a section through an eye of a person who is focusing on a near object.

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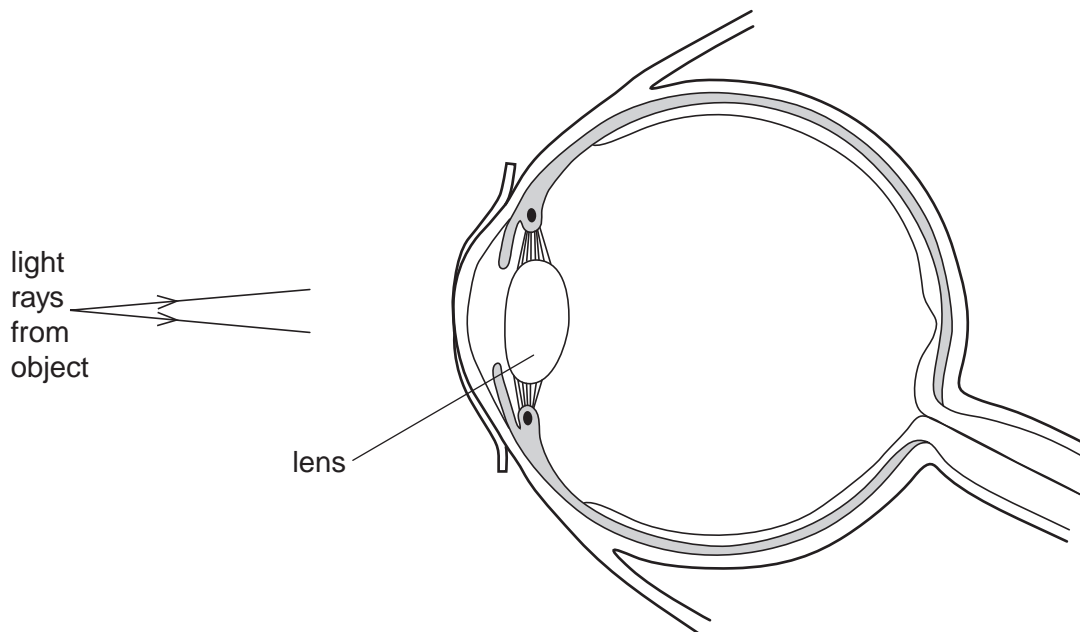


Fig. 5.1

- (a) On Fig. 5.1, continue the light rays into the eye to show how a focused image is produced on the retina. [2]
- (b) When a person who is looking at a book then focuses on an aeroplane in the sky, the lens of the eye changes shape.
  - (i) Choose the lens, **T**, **U**, **V** or **W** in Fig. 5.2, which most closely resembles the appearance of the lens in the eye when focused on the aeroplane.



Fig. 5.2

lens ..... [1]

- (ii) Describe what happens in the eye to bring about this change in the shape of the lens.

.....

.....

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..... [2]

[Total: 5]

6 Fig. 6.1 shows a replacement joint in a person's arm.

For  
Examiner's  
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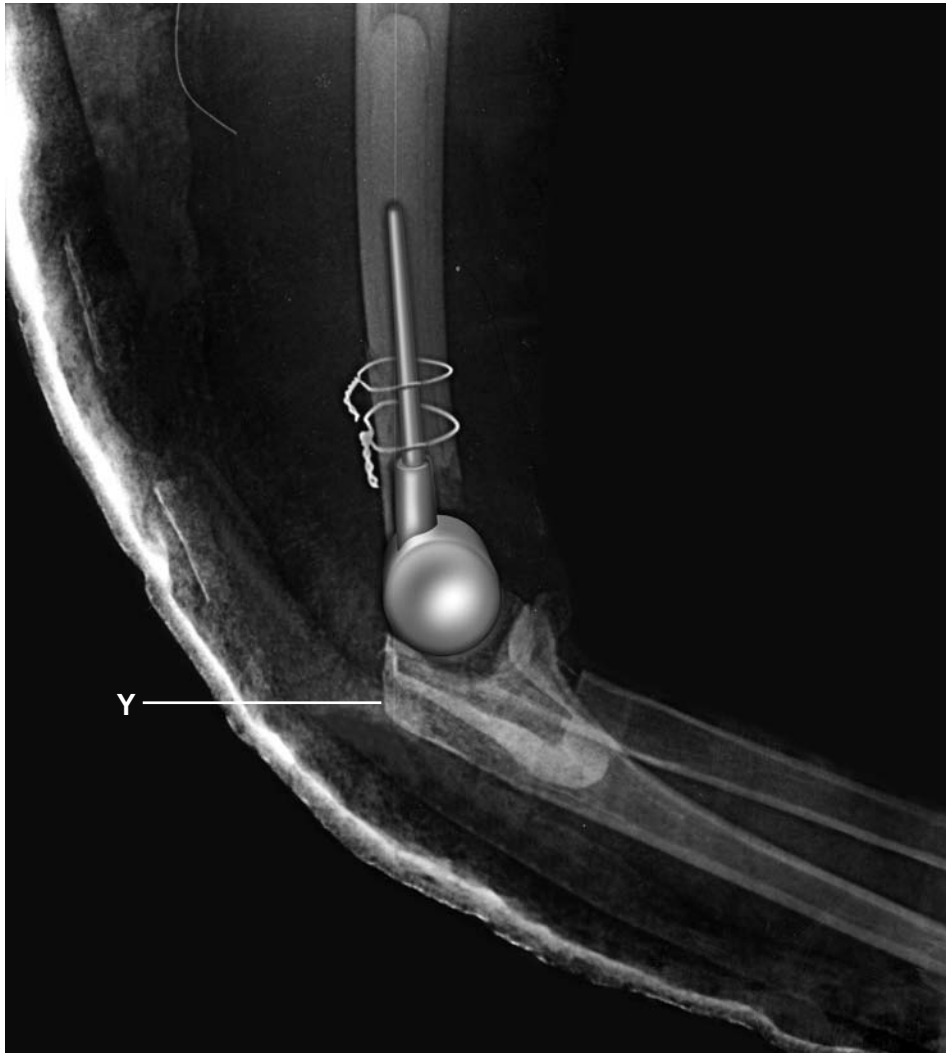


Fig. 6.1

(a) State the type of movement allowed by the joint that has been replaced.

.....[1]

(b) There is a structure that attaches a muscle to point Y in Fig. 6.1. Name this structure and explain its importance in the movement of the forearm.

*name of structure* .....

*importance* .....

.....

.....

.....[3]

[Total: 4]

- 7 Table 7.1 shows some of the major constituents in a man's sweat.

For  
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Use

**Table 7.1**

concentration/micrograms per 100 cm <sup>3</sup>		
nitrogenous compounds (including urea, amino acids and broken-down hormones)	glucose	sodium chloride
31.5	12.5	3.5

People who sweat a lot and do not wash regularly may suffer from body odour. To prevent sweating, they may use an antiperspirant spray that blocks the sweat ducts.

- (a) Explain why it is important to use an antiperspirant spray **only** on those parts of the body that produce most sweat, such as under the arms, and not to use it all over the body.

.....

.....

.....

.....

..... [3]

- (b) Use the information in Table 7.1 to suggest why the regular use of an antibacterial soap is a better way of controlling body odour.

.....

.....

..... [2]

[Total: 5]













(b) Explain why motor exhaust fumes can be harmful to the body.

For  
Examiner's  
Use

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..... [6]

[Total: 15]







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