UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE NAME	
CENTRE NUMBER	
CANDIDATE NUMBER	

4527425690

BIOLOGY **0610/23**

Paper 2 Core **May/June 2012**

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 a pencil for any diagrams or graphs.
Do not use staples, paper clips, highlighters, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.
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	
6	
7	
8	
9	
Total	

This document consists of **17** printed pages and **3** blank pages.

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1 Fig. 1.1 shows five types of bird that are unable to fly.

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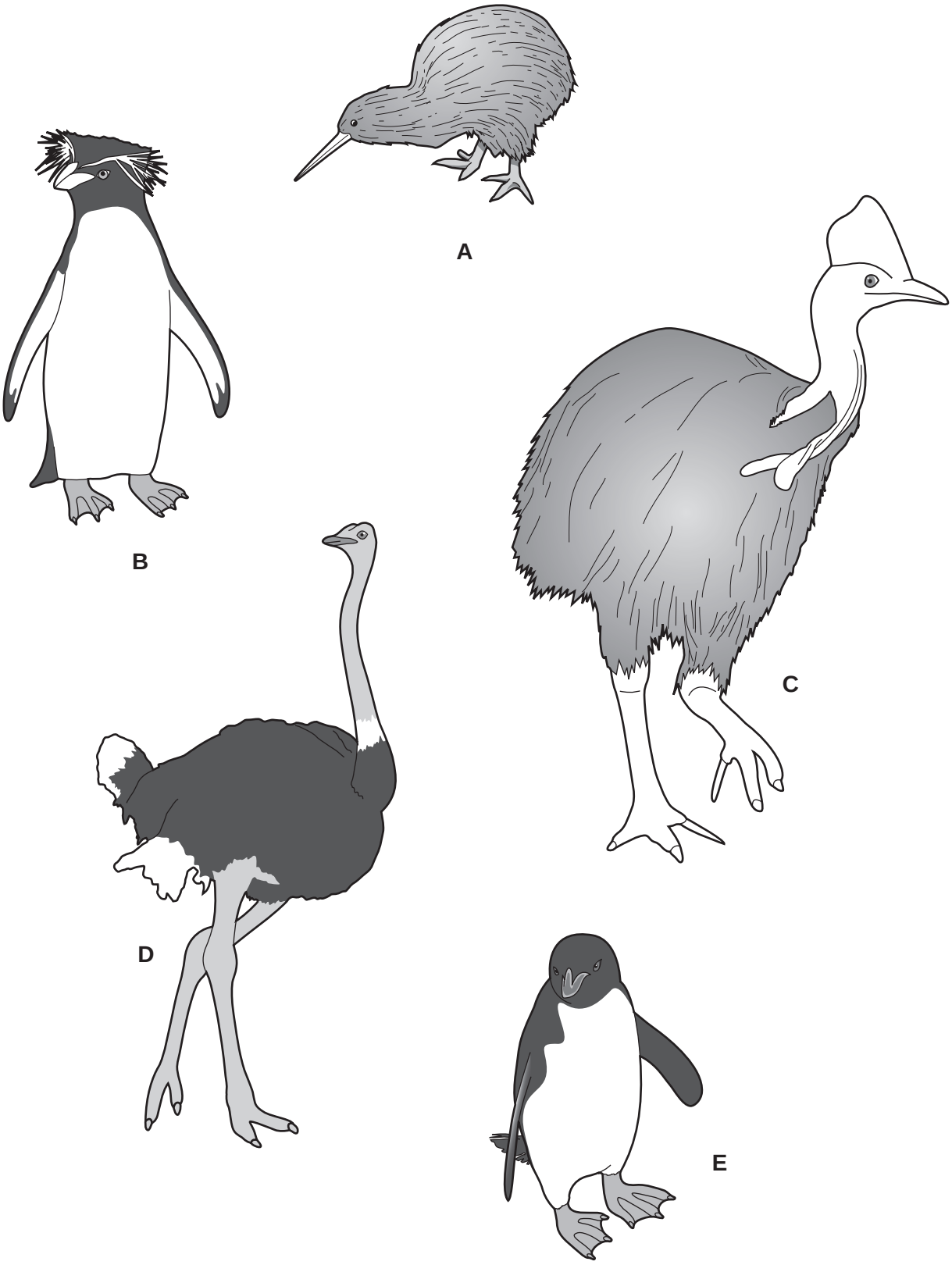


Fig 1.1

Use the key to identify each of the birds shown in Fig. 1.1.

Write the name of each bird in the correct box in Table 1.1.

For Examiner's Use

Key

	name of bird
1 (a) Bird with webbed feet (webs of skin between toes) (b) Bird without webbed feet (no webs of skin between toes)	go to 2 go to 3
2 (a) Bird with tufts of feathers near the eyes (b) Bird with no tufts of feathers near the eyes	*E. crestatus* *P. adeliae*
3 (a) Bird with crest on head (b) Bird without crest on head	*C. casuarius* go to 4
4 (a) Bird with very long neck (b) Bird with short neck	*S. camelus* *A. australis*

Table 1.1

bird	name of bird
A	
B	
C	
D	
E	

[5]

[Total: 5]

For Examiner's Use

2 **(a)** Fig. 2.1 shows a section through the heart.

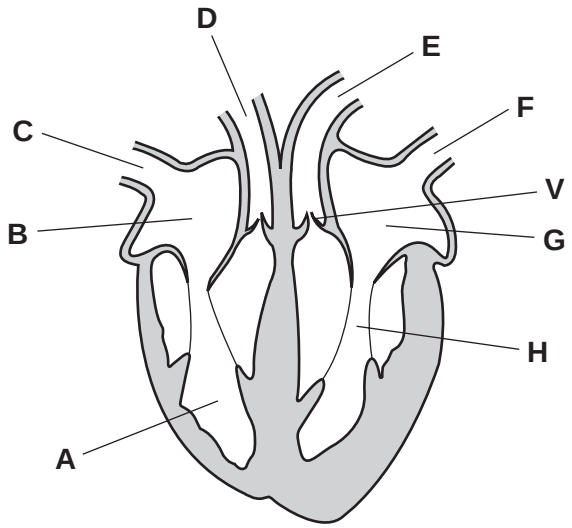


Fig. 2.1

(i) Table 2.1 lists functions of parts of the heart and associated blood vessels.

Complete the table by identifying which structure, **A** to **H**, carries out each of the following functions.

Table 2.1

function	letter
vessel returning blood from the body	
chamber which pumps blood to the body	
vessel which carries blood to the lungs	
vessel which carries blood at the highest pressure	

[4]

(ii) Describe the function of structure **V**.

.....

.....

..... [2]

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(b) A person's pulse rate rises as they run a race.

(i) Explain why the pulse rate rises during the race.

.....

.....

.....

.....

..... [3]

(ii) Describe how you could measure the pulse rate of a person.

.....

.....

.....

..... [2]

[Total: 11]

For Examiner's Use

3 **(a)** Fig. 3.1 shows variegated (green and white) leaves on a destarched plant. Part of one of the leaves was covered.

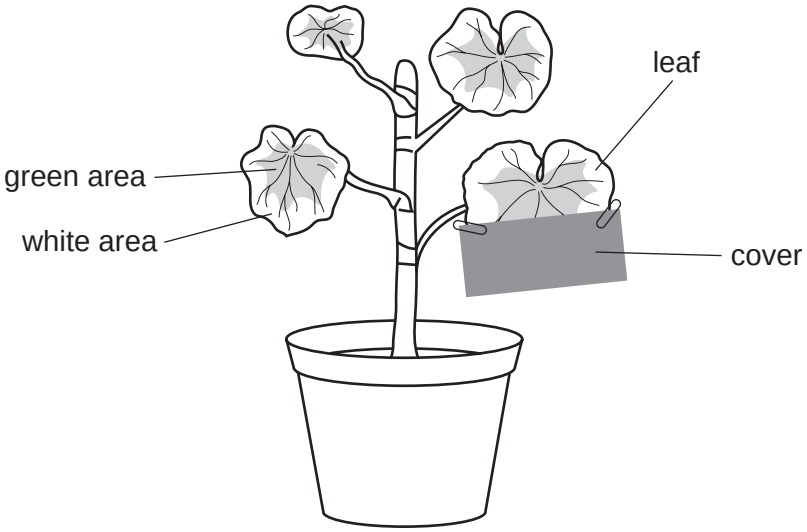


Fig. 3.1

(i) The plant was left in bright light for 24 hours and then the cover was removed from the leaf. The leaf was tested for the presence of starch.

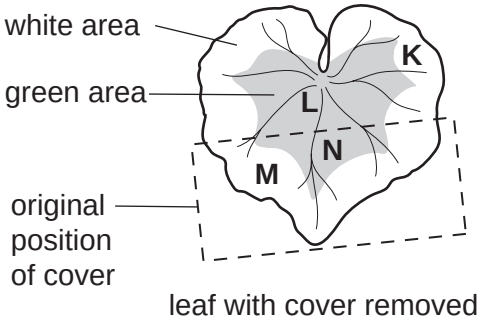


Fig. 3.2

Suggest which areas of the leaf, as shown in Fig. 3.2, would have contained starch after 24 hours.

Table 3.1

area	contains starch
K	.....
L	.....
M	.....
N	.....

key

✓ = starch present

x = starch absent

Record your suggestions in Table 3.1. [2]

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(ii) Give reasons for your suggestions for areas **K** and **L**.

area **K** .....

.....

.....

area **L** .....

.....

..... [4]

(iii) Starch is formed from a simple carbohydrate.

Name the process, carried out by plants, that produces this simple carbohydrate.

..... [1]

(iv) State which gas is released from the leaf when this simple carbohydrate is being produced.

..... [1]

(b) Magnesium ions are needed to form the green pigment in the leaf.

(i) State where magnesium ions enter a plant.

.....

..... [1]

(ii) Suggest how magnesium ions enter a plant.

.....

.....

.....

..... [2]

[Total: 11]

For Examiner's Use

4 Fig. 4.1 shows a section through the male reproductive system.

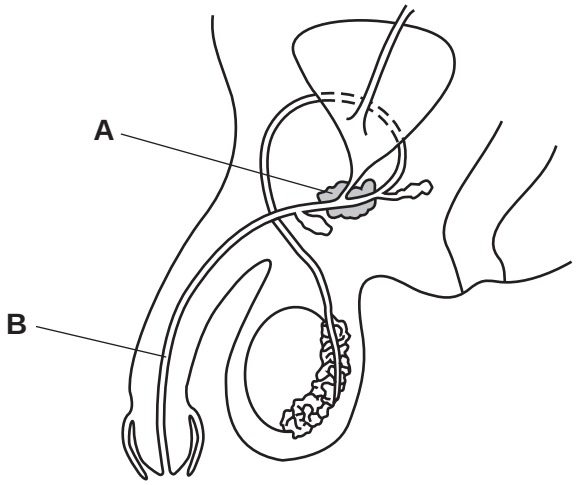


Fig. 4.1

(a) (i) Name the structures labelled **A** and **B**.

A .....

B ..... [2]

(ii) On Fig 4.1 label with a line and the letter **T** where the hormone testosterone is produced.

Put the line and letter on Fig. 4.1 [1]

(iii) Name the stage in a male child's development when the secondary sexual characteristics appear.

..... [1]

(iv) Sometimes athletes attempt to cheat by taking performance enhancing drugs such as testosterone.

Suggest two ways in which taking testosterone may give them an unfair advantage in a competition.

1 .....

.....

2 .....

..... [2]

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(b) If a man damages his hip he might require an X-ray.

Suggest why it is important to protect his testes from radiation, such as X-rays.

.....

.....

.....

.....

..... [3]

[Total: 9]

For Examiner's Use

For Examiner's Use

5 Tropical rainforest is one of the habitats with the greatest number of species on the Earth but it is being rapidly destroyed.

(a) Table 5.1 shows data from six countries that have large areas of tropical rainforest.

Table 5.1

country	area of rainforest in 1990 / thousand ha	area of rainforest in 2005 / thousand ha
Brazil	520 027	477 695
Ecuador	13 817	10 853
Indonesia	116 567	88 497
Madagascar	13 692	12 855
Philippines	10 561	7 181
Venezuela	52 026	47 713

(i) Which country had the largest area of tropical rainforest in 2005?

..... [1]

(ii) Calculate the total area of rainforest lost in the Philippines between 1990 and 2005.

answer = ... thousand ha [1]

(iii) In the space below calculate the percentage of tropical rainforest lost in the Philippines between 1990 and 2005. Show your working.

answer = ... % [2]

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(b) One method of deforestation is to remove the large trees for timber and then burn the rest of the vegetation.

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Explain why deforestation is considered harmful to the environment.

.....

.....

.....

.....

.....

.....

.....

..... [4]

[Total: 8]

For Examiner's Use

6 A person's blood glucose concentration should remain within narrow limits.

(a) (i) Name the process that keeps conditions inside the body within narrow limits.

.....

[1]

(ii) Name the main process that uses glucose from the blood.

.....

[1]

(b) The graph, Fig. 6.1, shows the blood glucose concentration of a boy over 14 hours.

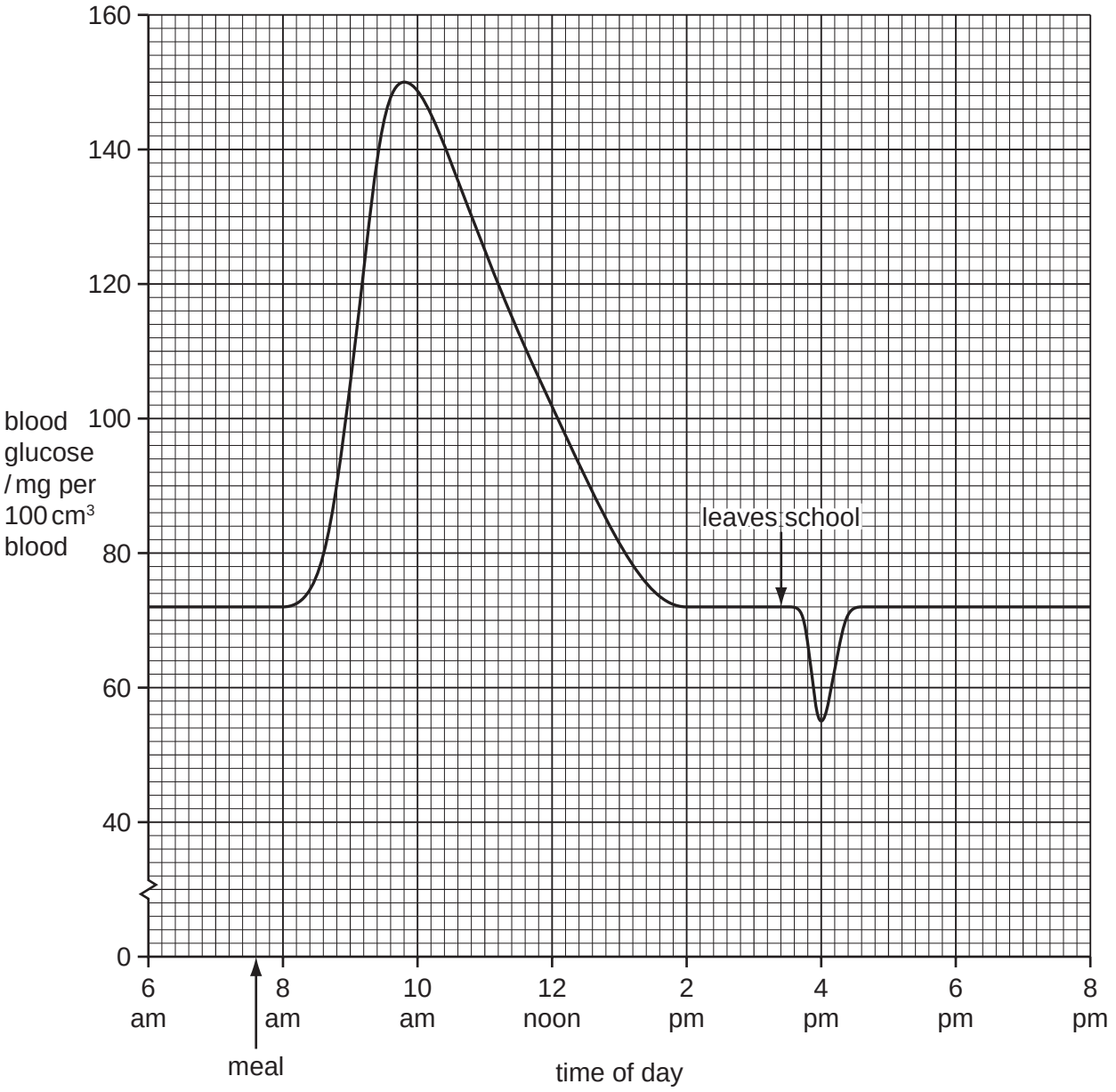


Fig. 6.1

The boy had a meal at about 7.45 am.

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(i) What was the boy's blood glucose concentration before this meal?

..... mg per 100 cm^3 blood [1]

(ii) What was the boy's maximum blood glucose concentration after this meal?

..... mg per 100 cm^3 blood [1]

(c) After the meal the boy's pancreas secreted a hormone that helped to remove excess glucose from the blood and store it.

(i) On Fig. 6.1 mark with a letter **G** when the pancreas started to secrete this hormone. [1]

(ii) State the form in which glucose is stored in the body.

..... [1]

(iii) State **one** organ in the body where this storage occurs.

..... [1]

(d) On the way home from school, the boy was involved in a fight.

(i) State what happened to the boy's blood glucose concentration at the start of the fight.

..... [1]

(ii) During the fight the boy's body produced another hormone.
Name this hormone.

..... [1]

(iii) Describe three effects this hormone had on the boy's body.

1 .....

.....

2 .....

.....

3 .....

..... [3]

[Total: 12]

For Examiner's Use

7 Fig. 7.1 shows a bee visiting a flower.

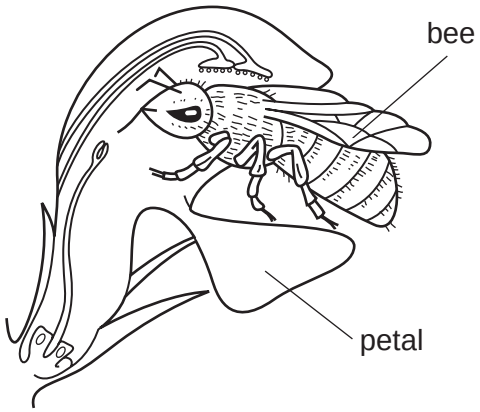


Fig. 7.1

(a) (i) State **one** advantage **to the bee** of its visit to this flower.

.....

..... [1]

(ii) State **one** advantage **to the flower** of the visit by this bee.

.....

..... [1]

(iii) Suggest two features of the flower that might have attracted the bee to the flower .

1 .....

.....

2 .....

..... [2]

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(b) Fig. 7.2 shows the female part of a flower before fertilisation.

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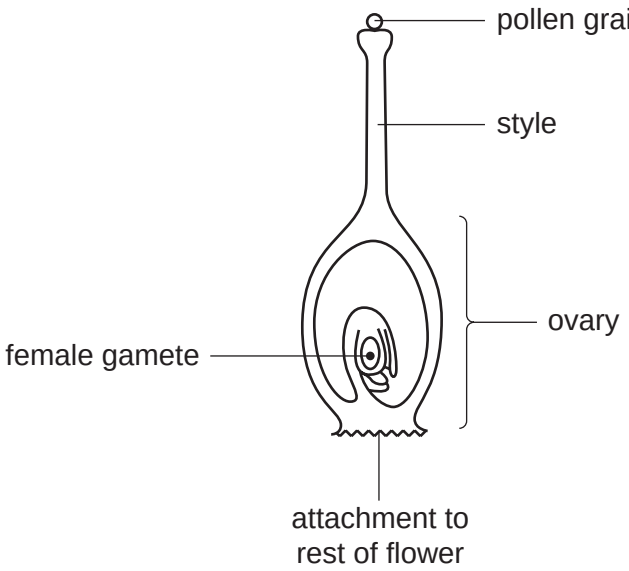


Fig. 7.2

Describe the events that must take place before a seed can develop.

.....

.....

.....

.....

.....

..... [3]

(c) Explain why the seed that develops is likely to grow into a plant that is similar, but not identical, to its parent plants.

.....

.....

.....

.....

.....

..... [3]

[Total: 10]

For Examiner's Use

8 Small insect-eating birds are feeding on the caterpillars that are eating the leaves of a tree. A pair of sparrow hawks is hunting for small birds to feed their young.

(a) Fig. 8.1 shows a pyramid of numbers for this food chain.

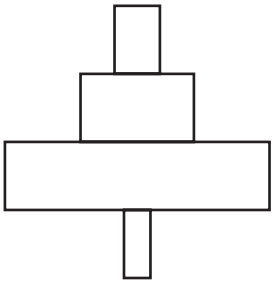


Fig. 8.1

(i) On Fig. 8.1, write the names of the organisms present at each trophic level. [1]

(ii) In the space below draw a pyramid of biomass for this food chain.

[2]

(iii) State a reason for the different shapes of the two pyramids.

.....

..... [1]

(b) (i) Name an organism in this food chain that is a herbivore.

..... [1]

(ii) Name an organism that is a carnivore.

..... [1]

(iii) Name a group of organisms that would be part of this food chain but which are not included in either pyramid.

..... [1]

[Total: 7]

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For Examiner's Use

9 Fig. 9.1 shows two front views, **S** and **T**, of a human eye in two different light intensities.

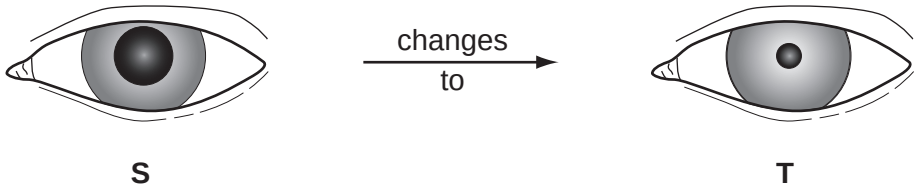


Fig. 9.1

(a) (i) Suggest how the light intensity changes from **S** to **T**.

.....

..... [1]

(ii) Explain how the changes in the eye, shown in Fig. 9.1, were brought about.

.....

.....

.....

.....

.....

..... [3]

(b) The changes in the appearance of the pupil are known as the "pupil reflex".

(i) Describe the characteristics of a reflex action.

.....

.....

.....

..... [2]

(ii) Suggest how the pupil reflex protects the eye.

.....

..... [1]

[Total: 7]

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