

Section A

Answer **all** questions in this section.

Write your answers in the spaces provided.

1 The diagram shows the parts of a plant growing above ground.



(a) (i) State the type of reproduction that takes place using the flower shown in the diagram.

..... [1]

(ii) Describe the events that must take place for the flower to develop into a fruit.

.....

 [5]

(b) The plant may also reproduce without using a flower, to produce new plants from plantlets.

State the type of reproduction that produces the plantlets.

..... [1]

(c) Suggest the advantages to the plant of reproducing by each of the following methods:

using flowers,

.....

.....

using plantlets.

.....

.....

[3]

[Total: 10]

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2 The diagram shows a seed (Fig. 1) and a plant developing from this seed (Fig. 2).

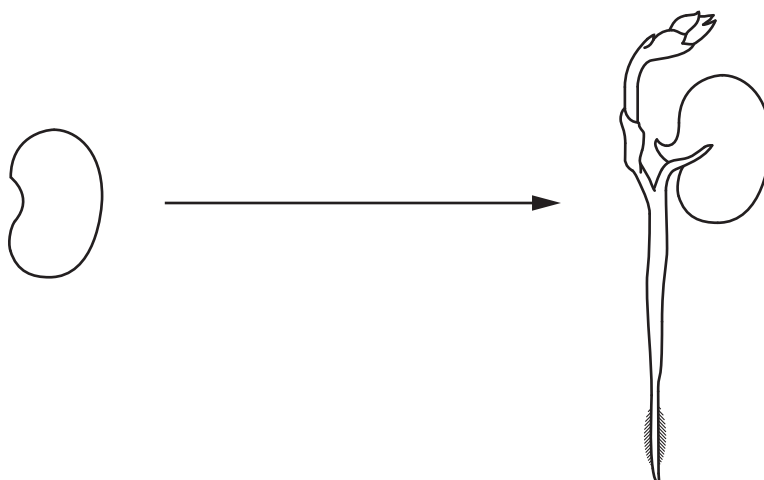


Fig. 1

Fig. 2

(a) (i) Name **two** structures visible in Fig. 2 that are **not** visible in Fig. 1.

1

2

[2]

(ii) Name the process represented by the arrow drawn between Fig. 1 and Fig. 2.
Describe the use of enzymes in this process.

name of process

use of enzymes

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

[4]

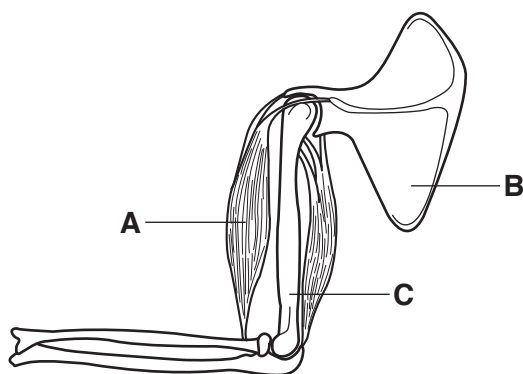
(b) In an experiment, the growth of a plant from a seed is found to be faster as temperatures increase up to 35 °C.

Explain how the development of a plant from a seed would be affected by a temperature much higher than 35 °C.

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

[Total: 8]

3 The diagram shows the arrangement of bones and muscles in the arm.



(a) (i) Name each of the following:

A

B

C

[3]

(ii) Identify the hinge joint on the diagram, by using a label line and the letter **H**.

[1]

(iii) Describe how the type of movement of a ball and socket joint differs from that of a hinge joint.

.....

..... [1]

(b) The contraction of muscle **A** to raise the lower part of the arm requires energy. This energy may be provided by aerobic respiration.

(i) State the equation, in words or symbols, for aerobic respiration.

..... [2]

(ii) Explain why a person may feel pain in muscle **A** if the arm is raised and lowered a number of times quickly.

.....

.....

..... [2]

(iii) Suggest and explain what would happen to the time taken for the person to feel pain ... muscle **A** if the arm was raised and lowered while holding a heavy object in the hand.

.....

.....

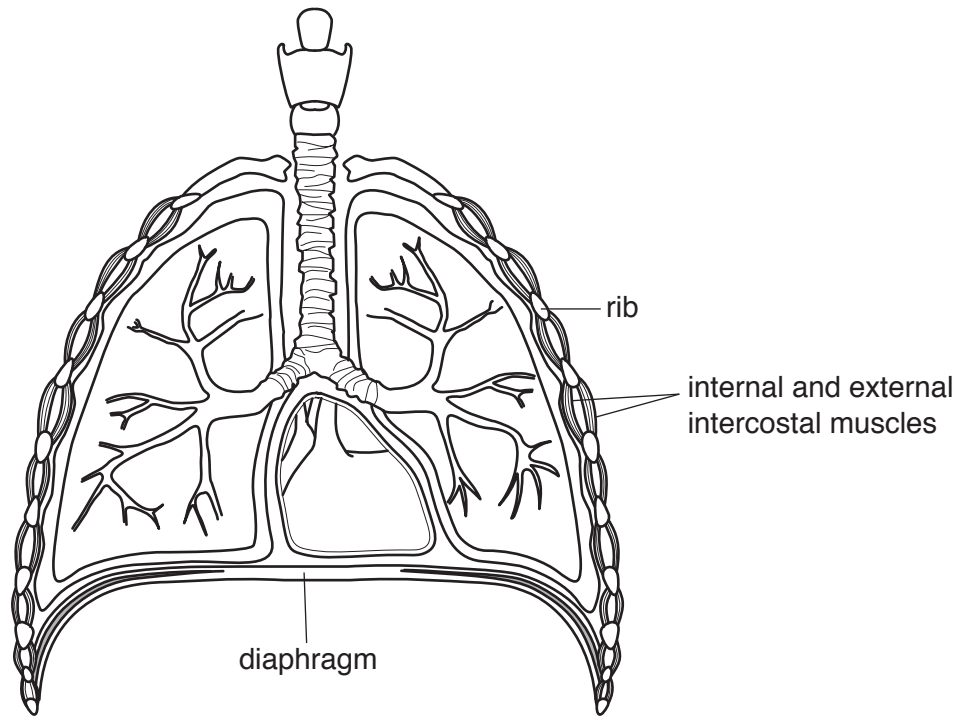
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..... [3]

[Total: 12]

4 The diagram shows the human thorax.



(a) (i) Describe how each of the structures named in the diagram is involved when a person takes a single breath in.

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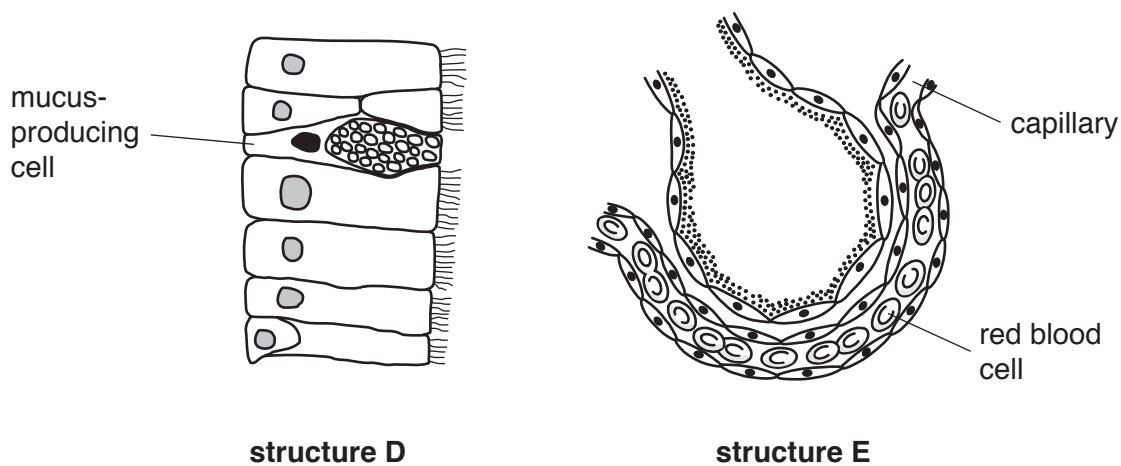
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..... [3]

(ii) The diagrams below show two magnified structures, **D** and **E**, from the thorax.



Draw lines labelled **D** and **E** on the diagram of the thorax on page 8 to indicate the positions of **structure D** and **structure E**. [2]

(b) Describe how structure is related to function for each of the following:

a capillary,

.....

.....

a red blood cell.

.....

..... [5]

[Total: 10]

- 5 Fig. 1 shows cells from a plant tissue which have been mounted on a slide with distilled water and viewed using a microscope.

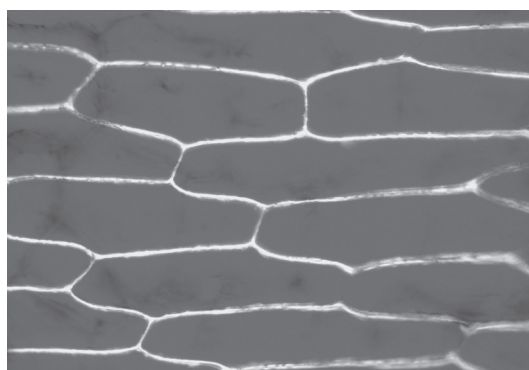


Fig. 1

Fig. 2 shows cells taken from the same plant tissue when mounted on a slide with concentrated salt solution.

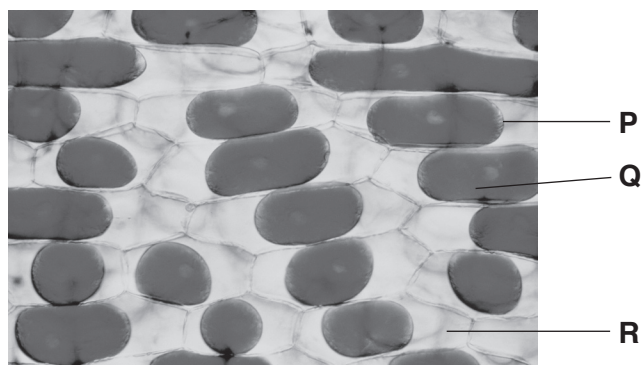


Fig. 2

- (a) Explain the appearance of the cells in Fig. 2.

.....

.....

.....

.....

.....

.....

..... [4]

- (b) (i) Identify structures **P** and **Q** in Fig. 2.

P

Q

[2]

- (ii) State the contents of location **R** in Fig. 2.

.....

[1]

(iii) The concentrations of substances in structure **Q** are different from those in location **R**.

Explain how the properties of structure **P** result in differences in concentrations of substances in **Q** and **R**.

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..... [3]

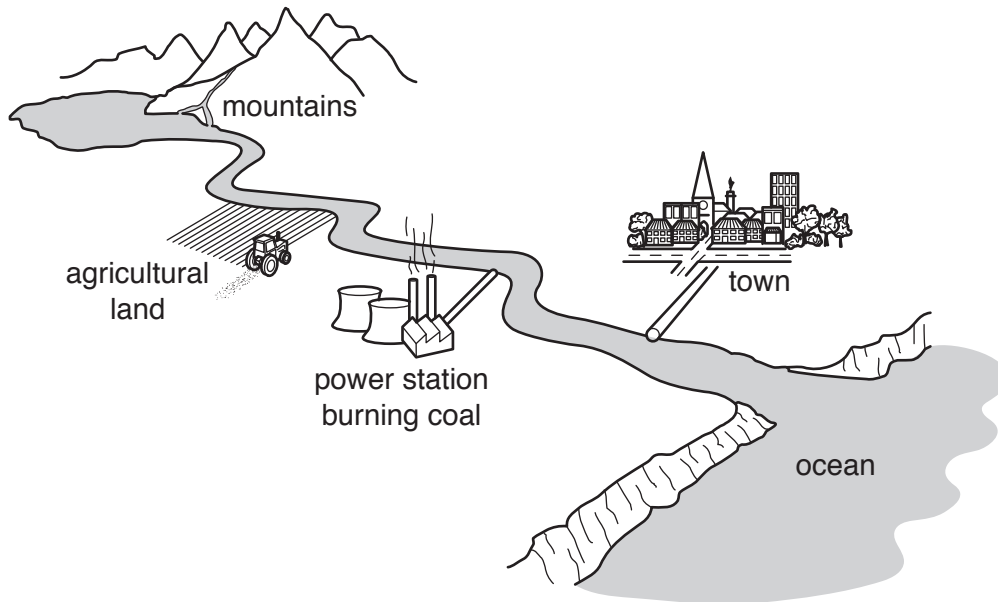
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Section B

Answer **both** questions in this section.

Write your answers in the spaces provided.

- 6 The diagram shows the location of several features close to a river that runs from mountains into the ocean.



- (a) Describe and explain the possible harmful effects of human activity on the environment at each of the following locations:

the agricultural land,

.....

.....

.....

.....

the power station.

.....

.....

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..... [6]

(b) Suggest ways in which people in the town could make changes to their activities in order to reduce the harmful impact that they have on the environment.

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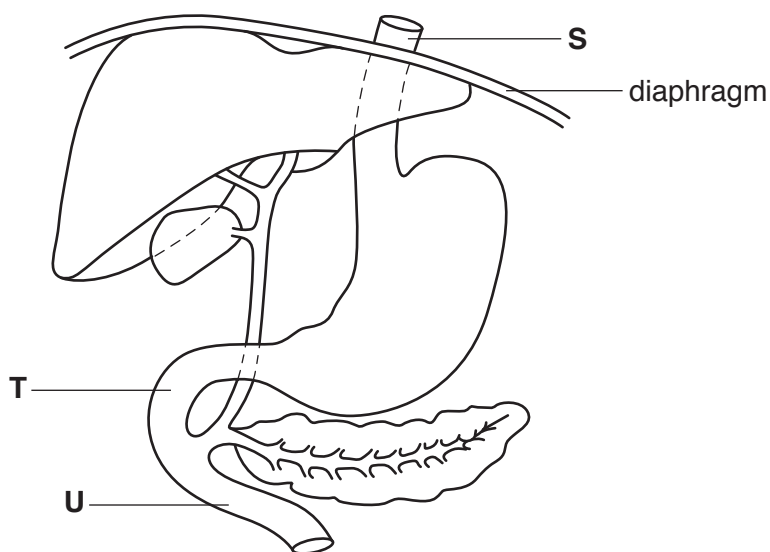
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..... [4]

[Total: 10]

7 The diagram shows a region of the alimentary canal and the associated organs.



(a) (i) Identify part **S**.

.....

[1]

(ii) Name and describe the process which moves food through part **S**.

.....

 [4]

(b) (i) Draw a ring around the correct words to complete the sentence below.

higher than

the same as

lower than

The pH at location **U** is that at location **T**.

[1]

- (ii) Explain how the pH at location **U** results from secretions produced by organs shown ... the diagram. Name these organs.

.....

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.....

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.....

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..... [4]

[Total: 10]

9 (a) Describe and explain how each of the following affects the rate of photosynthesis:

light intensity,

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temperature.

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..... [7]

(b) Explain how animals are dependent on the process of photosynthesis.

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..... [3]

[Total: 10]

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