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CANDIDATE NAME

CENTRE NUMBER

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0824980872

BIOLOGY **0610/32**

Paper 3 Theory (Core) **May/June 2025**

1 hour 15 minutes

You must answer on the question paper.

No additional materials are needed.

INSTRUCTIONS

- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- You may use a calculator.
- You should show all your working and use appropriate units.

INFORMATION

- The total mark for this paper is 80.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **20** pages. Any blank pages are indicated.

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[Turn over

1 **(a)** Photosynthesis occurs in leaves.

(i) State the name of the structure in a plant cell where photosynthesis occurs.

..... [1]

(ii) State the name of the pigment found in the cell structure where photosynthesis occurs.

..... [1]

(b) Fig. 1.1 shows the outline of a leaf drawn on squared paper.

The side of one square is 1 cm.

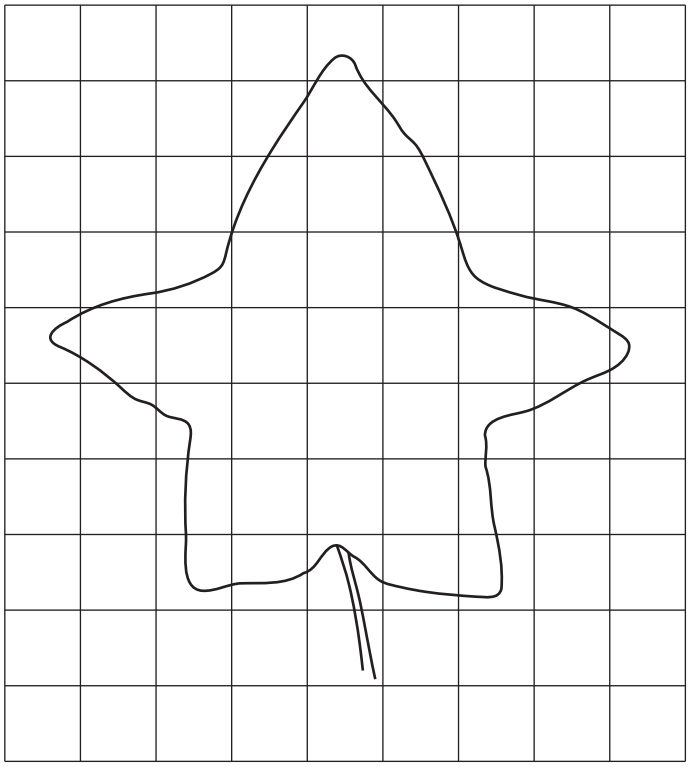


Fig. 1.1

(i) The student counted the number of squares to determine the surface area of the leaf.

They counted 35 squares.

State the unit for this measurement of surface area.

35 ..... [1]

(ii) Explain how the large surface area of a leaf is an adaptation for photosynthesis.

.....

.....

..... [1]

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(c) Fig. 1.2 shows a cross-section of part of a leaf.

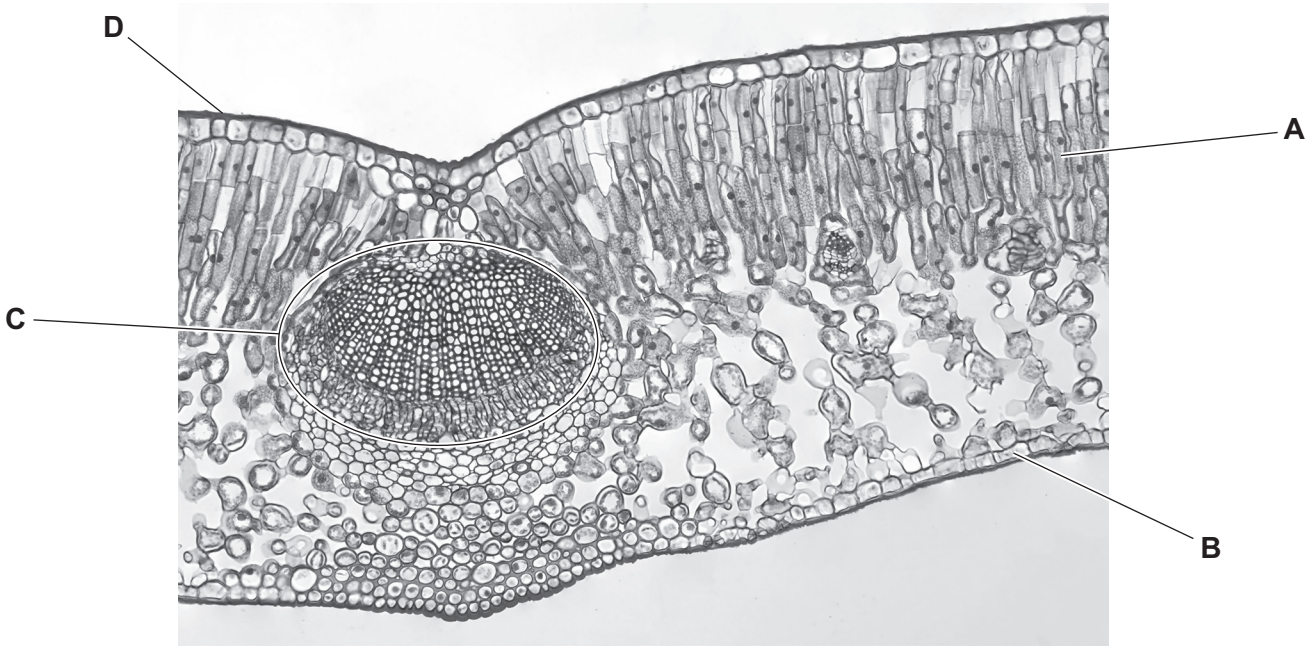


Fig. 1.2

(i) State the names of the structures labelled **A**, **B** and **D** in Fig. 1.2.

A .....

B .....

D .....

[3]

(ii) State the names of the **two** types of tissue that make up structure **C** in Fig. 1.2.

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

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(d) Fig. 1.3 shows part of the lower surface of a leaf.

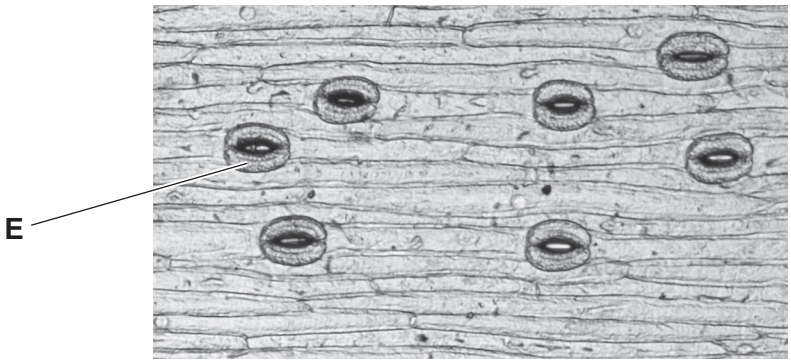


Fig. 1.3

(i) State the name of the cell labelled **E** in Fig. 1.3.

..... [1]

(ii) Describe how cell **E** adapts the leaf for photosynthesis.

.....

.....

.....

.....

..... [2]

[Total: 12]

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2 **(a)** Seeds of different crop plants germinate at different temperatures.

Table 2.1 shows the temperatures at which each crop plant germinates.

Table 2.1

crop plants	temperature range / °C
carrot	7–29
corn	16–35
pea	4–24
pepper	18–35
tomato	21–35

The list shows five conclusions.

Tick (✓) **two** conclusions for the data shown in Table 2.1.

All species will germinate at 18 °C.	
Carrots, corn, peppers and tomatoes will germinate at 30 °C.	
Carrots have the largest temperature range for germination.	
Only tomatoes will germinate at the highest temperature.	
Tomatoes have the smallest temperature range for germination.	

[2]

(b) A student investigated the conditions needed for carrot seed germination.

The seeds were kept at 10 °C, which is a suitable temperature for germination.

Test-tubes **A** and **C** contained only carbon dioxide gas.

Test-tubes **B** and **D** contained only oxygen gas.

Fig. 2.1 shows the apparatus used.

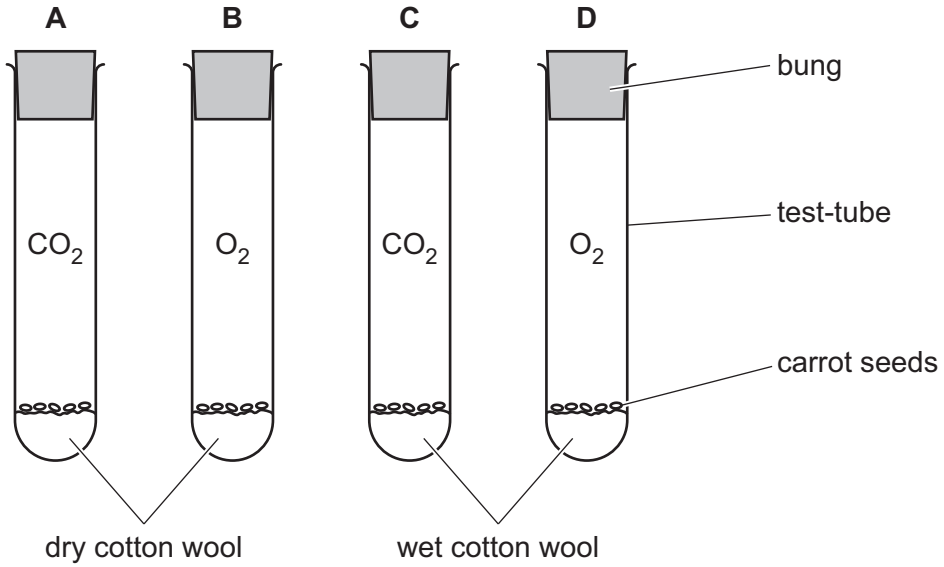


Fig. 2.1

(i) Using the information in Fig. 2.1, state the letter of the test-tube containing carrot seeds that will germinate **and** explain why these seeds will germinate.

test-tube .....

explanation .....

.....

.....

.....

.....

[3]

(ii) Carrot seeds germinate between 7 °C and 29 °C.

The investigation was repeated at 25 °C.

Predict the results you would expect at 25 °C.

.....

.....

..... [1]

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(c) Complete the sentences about plant growth.

After germination, seeds develop into a seedling with a shoot and a root.

The plant shoot grows **towards** the direction of ..... .

This tropic response is called ..... .

The plant root grows into the soil **towards** ..... .

This tropic response is called ..... .

Root hairs develop, which increase the uptake of ..... and water. [5]

[Total: 11]

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3 **(a)** Pathogens are disease-causing organisms.

Describe how gastric juice in the stomach helps to defend the body against pathogens in food.

.....

.....

..... [2]

(b) Norovirus is a pathogen that affects the stomach and intestines, causing vomiting and diarrhoea.

Fig. 3.1 shows how norovirus is transmitted from person to person.

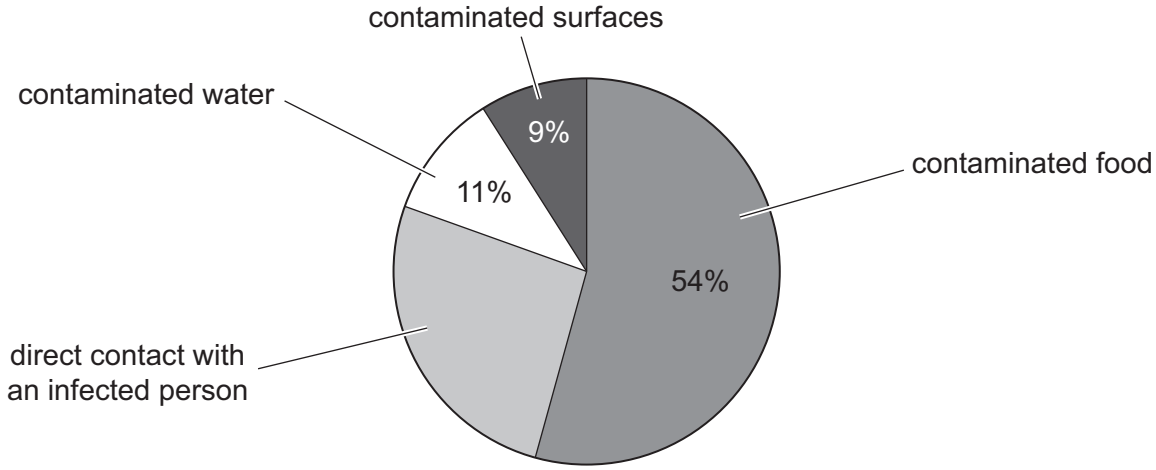


Fig. 3.1

(i) Using the information in Fig. 3.1, calculate the percentage of people that catch norovirus by direct contact with an infected person.

..... % [1]

(ii) In one area, 300 people caught norovirus.

Using Fig. 3.1, calculate how many of the 300 people caught the virus from contaminated water.

..... people [1]

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(c) Describe ways to prevent the indirect transmission of norovirus.

.....

.....

.....

.....

.....

.....

.....

.....

..... [4]

(d) Some viruses are transmitted through the air.

State **one** body defence that may prevent a virus in the air from reaching the lungs.

.....

.....

..... [1]

(e) Some bacteria are pathogens.

Fig. 3.2 is a diagram of a bacterium.

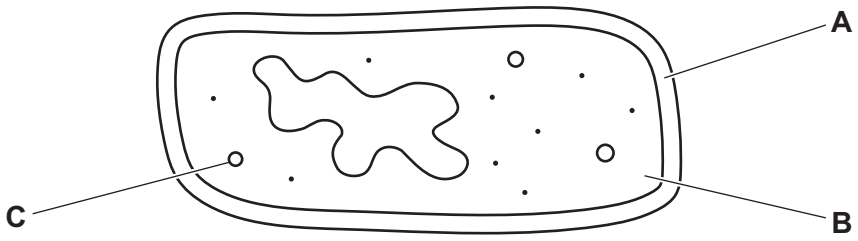


Fig. 3.2

Identify the structures labelled **A**, **B** and **C** in Fig. 3.2.

A .....

B .....

C .....

[3]

[Total: 12]

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4 **(a)** The boxes on the left contain some functions of blood components.

The boxes on the right contain the names of some blood components.

Draw straight lines from each function to the blood component that carries out that function.

Draw **four** straight lines.

function	**blood component**
antibody production	plasma
phagocytosis	red blood cell
transport of oestrogen	white blood cell
transport of oxygen using haemoglobin	

[4]

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(b) Platelets are a blood component.

(i) A high number of platelets can be caused by a lack of iron in the diet.

Tick (✓) **two** boxes that show food that is high in iron.

green leafy vegetables	
lemons	
red meat	
vegetable oil	
yoghurt	

[2]

(ii) Platelets in the blood are responsible for blood clotting.

State **two** roles of blood clotting.

1 .....

.....

2 .....

.....

[2]

(c) State the name of the main vessel that carries blood from the heart to the body.

..... [1]

[Total: 9]

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5 **(a)** Fig. 5.1 is a diagram of some of the muscles and bones found in the human gas exchange system.

Complete Fig. 5.1 by labelling the structures in the spaces provided.

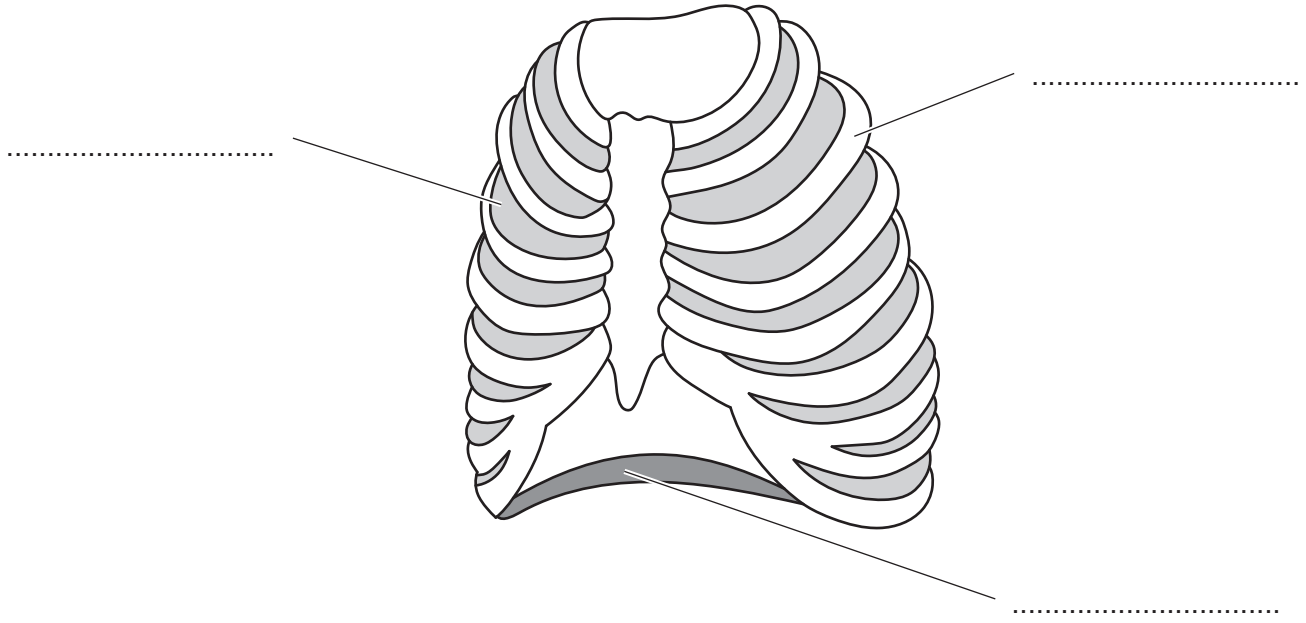


Fig. 5.1

[3]

(b) During breathing, air moves into and out of the alveoli.

(i) (Circle) the name of the part of the breathing system that is connected to the alveoli.

bronchi **bronchioles** **larynx** **trachea**

[1]

(ii) State the name of the organ that contains the alveoli.

..... [1]

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(c) Fig. 5.2 shows one alveolus and capillary.

(i) (Circle) the arrow **on Fig. 5.2** that shows the net direction of movement of carbon dioxide.

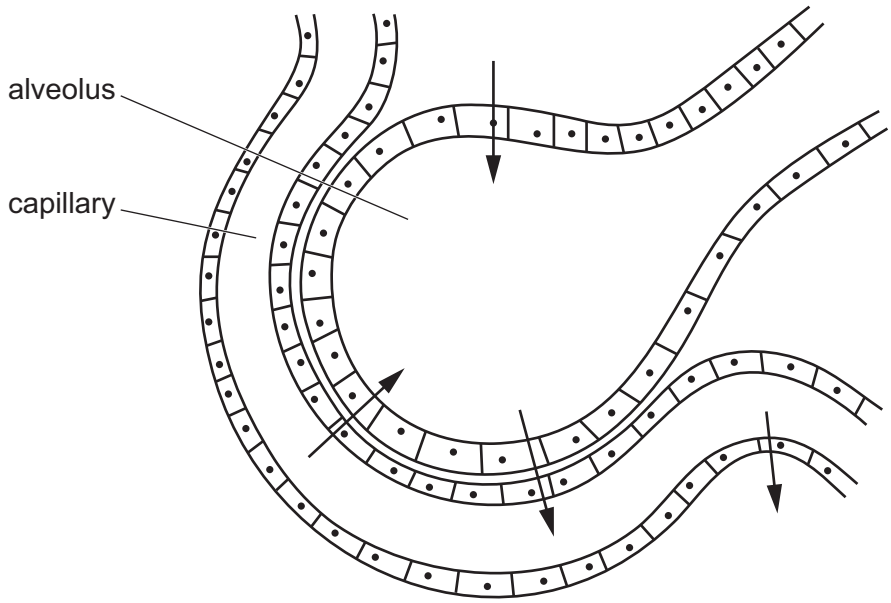


Fig. 5.2

[1]

(ii) The alveoli are adapted for efficient gas exchange.

Describe the features of alveoli that enable efficient gas exchange.

.....

.....

.....

.....

.....

.....

..... [3]

(d) (i) State the word equation for aerobic respiration.

..... [2]

(ii) State the name of the cell structure where aerobic respiration takes place.

..... [1]

[Total: 12]

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6 **(a)** Complete the sentences about diffusion.

Diffusion is the net movement of particles from a region of their ..... concentration to a region of their ..... concentration (down a concentration .....).

The energy for diffusion comes from the ..... energy of the ..... movement of molecules.

[4]

(b) Glucose diffuses into cells.

Glucose can be made into starch to be stored in plant cells.

(i) State the chemical elements that make up starch.

..... [1]

(ii) State the name of **one other** molecule that is made from glucose in plant cells.

..... [1]

(c) A student made a model of a cell using dialysis tubing. The student used the model cell to investigate the diffusion of starch and glucose.

Dialysis tubing only allows small molecules to pass through.

Fig. 6.1 shows the apparatus used.

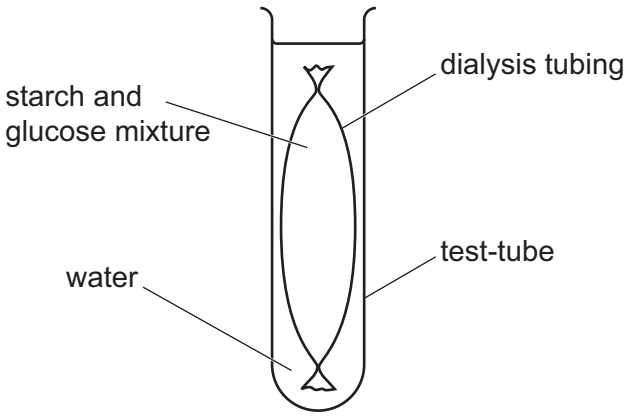


Fig. 6.1

(i) State the name of the cell structure that the dialysis tubing represents.

..... [1]

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(ii) After 10 minutes, the student tested the water **outside** the dialysis tubing for glucose and starch.

The results showed that glucose was present and starch was absent.

Explain these results.

.....

.....

.....

.....

..... [2]

(d) State the name of the enzyme that breaks down starch into reducing sugars.

..... [1]

[Total: 10]

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7 **(a)** Fig. 7.1 is a photograph of an Asian elephant, *Elephas maximus*.



Fig. 7.1

(i) State the genus name for the Asian elephant.

..... [1]

(ii) State **one** feature, visible in Fig. 7.1, used to identify the Asian elephant as a mammal.

..... [1]

(b) Fig. 7.2 is a drawing of a food web that includes the Asian elephant.

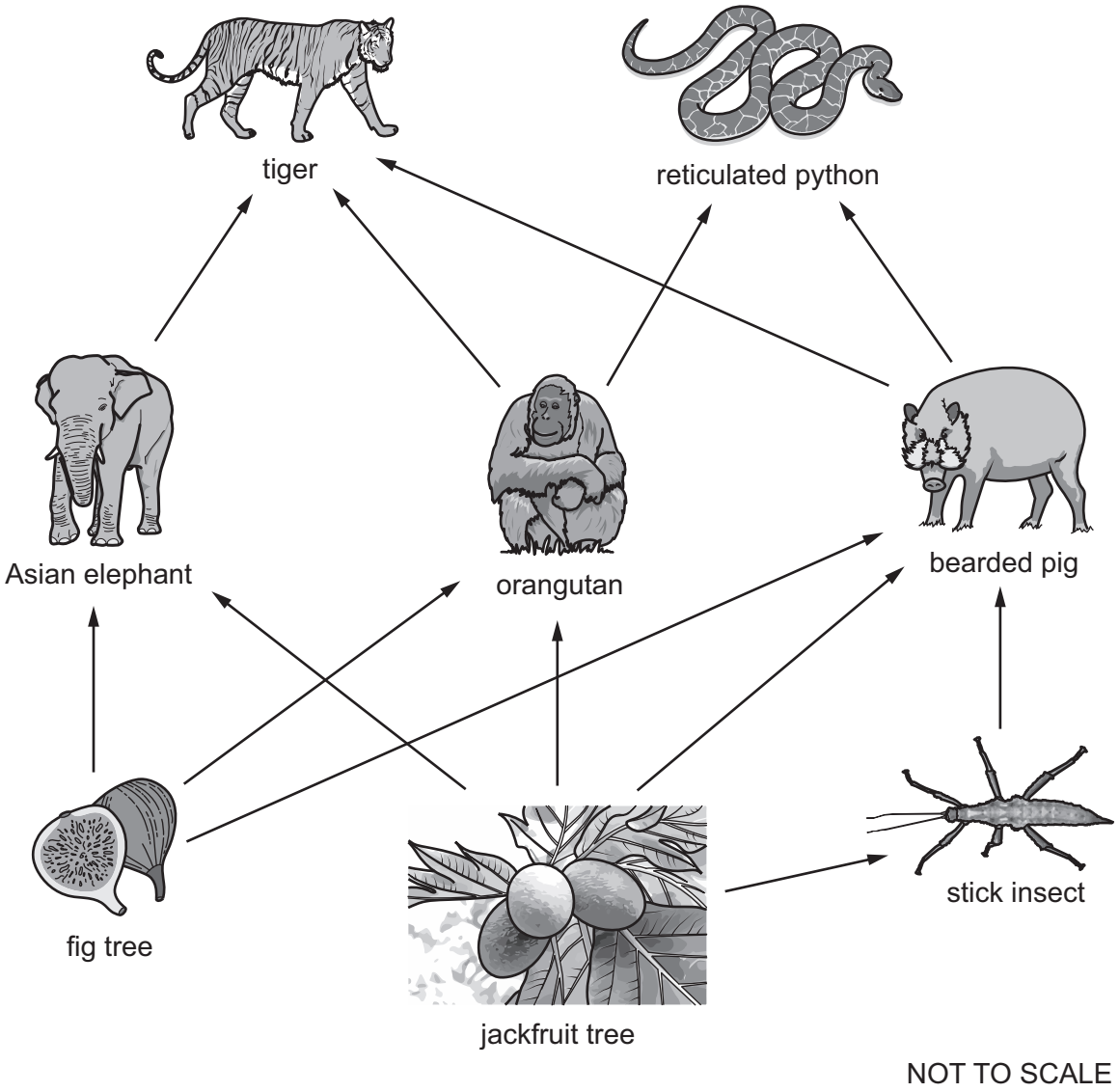


Fig. 7.2

(i) State the name of **one** species in Fig. 7.2 that is **both** a herbivore and a carnivore.

..... [1]

(ii) State the name of a tertiary consumer shown in Fig. 7.2.

..... [1]

(iii) State the name of a producer shown in Fig. 7.2.

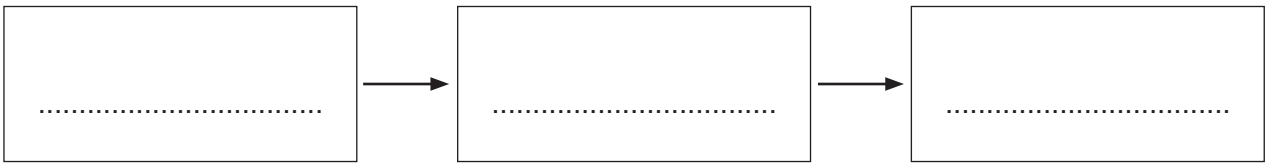
..... [1]

(iv) State the name of an arthropod shown in Fig. 7.2.

..... [1]

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(v) Using Fig. 7.2, complete a food chain that contains the orangutan and **two** other species.



[1]

(vi) The species shown in Fig. 7.2 are found in a rainforest ecosystem.

Describe what is meant by the term ecosystem.

.....

.....

.....

.....

..... [2]

(c) Fig. 7.3 shows how the population of Asian elephants changed from 2010 to 2016 in one country.

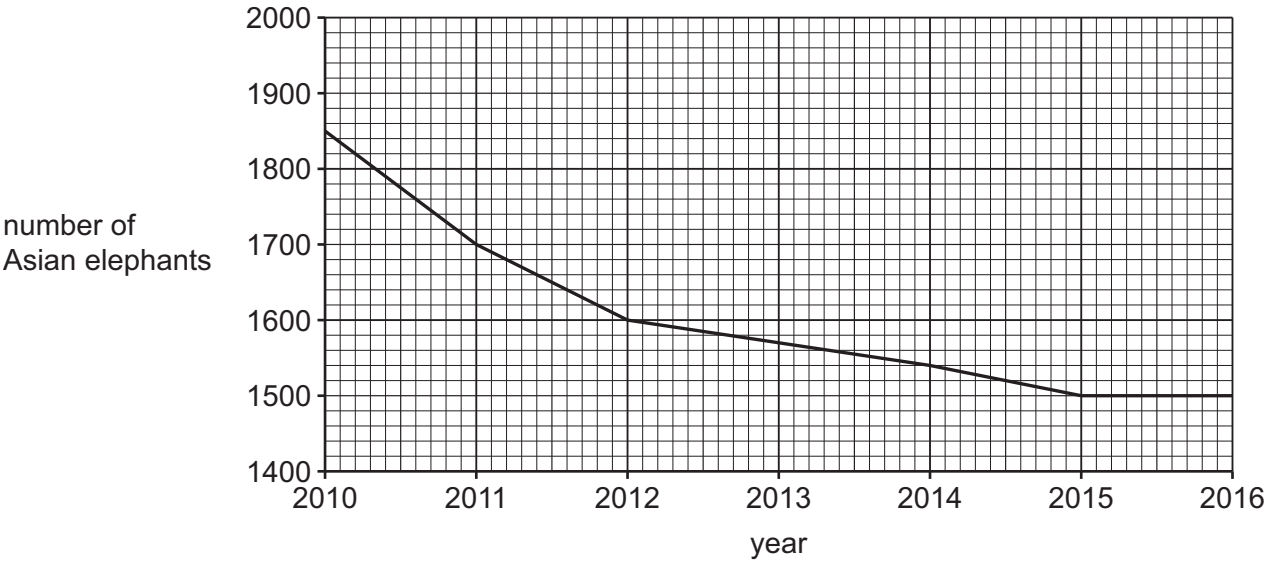


Fig. 7.3

Describe the change in the population of Asian elephants shown in Fig. 7.3.

.....

.....

.....

.....

..... [2]

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(d) Asian elephants are endangered.

Outline reasons why organisms become endangered.

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..... [3]

[Total: 14]

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