Centre No.						Surname	Initial(s)
Candidate No.						Signature	

Paper Reference(s)

4325/1F

Examiner's use only

Team Leader's use only

London Examinations IGCSE

Biology

Paper 1F

Foundation Tier

Wednesday 11 May 2005 – Morning

Time: 1 hour 30 minutes

Question Number	Leave Blank
1	
2	
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10	
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12	
13	
14	
15	
16	
Total	

Materials required for examination
Nil

Items included with question papers
Nil

Instructions to Candidates

In the boxes above, write your centre number and candidate number, your surname, initial(s) and signature.
The paper reference is shown at the top of this page. Check that you have the correct question paper.
Answer **ALL** the questions in the spaces provided in this question paper.
Show all the steps in any calculations and state the units.
Calculators may be used.

Information for Candidates

The total mark for this paper is 100. The marks for the parts of questions are shown in round brackets: e.g. (**2**).
There are 28 pages in this question paper. All blank pages are indicated.

Advice to Candidates

Write your answers neatly and in good English.

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1. For each question, (a) to (j), choose the best answer, **A**, **B**, **C** or **D**, and write the letter in the box.

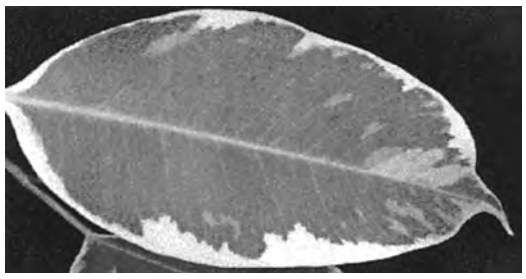
(a) The picture shows a living organism.

The living organism is

A an animal
B a plant
C a fungus
D a virus

(1)

(b) The picture shows part of a plant.



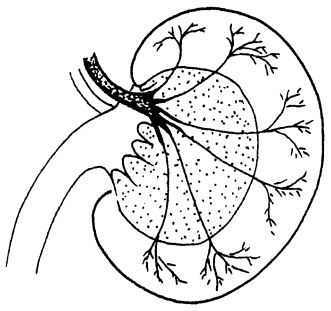
The picture shows a

A stem
B flower
C root
D leaf

(1)

Leave blank

(c) This is a diagram of one of the organs in the human body.

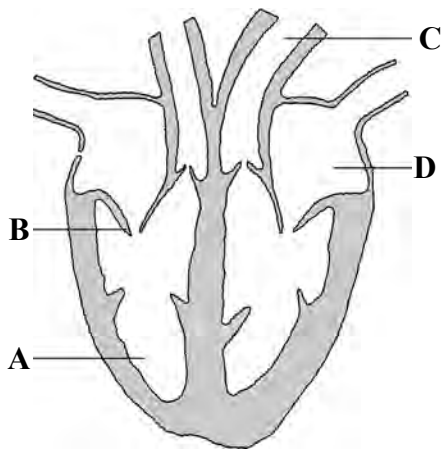


The name of this organ is the

A liver
B lung
C kidney
D pancreas

(1)

(d) The diagram shows a section through a heart.

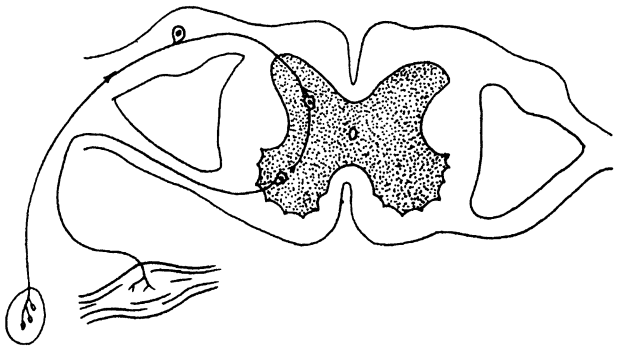


Which letter, **A**, **B**, **C** or **D**, labels a valve in the heart?

(1)

Leave blank

(e) This diagram shows part of a body system.



This is part of the

A reproductive system
B respiratory system
C circulatory system
D nervous system

(1)

(f) The diagram shows different foods.

Which statement is correct?

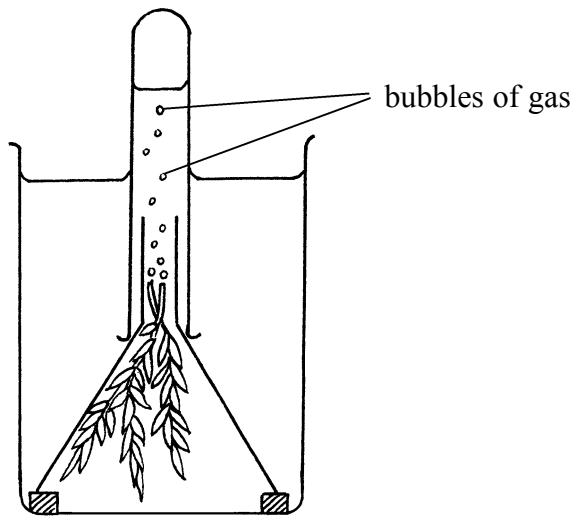
A Fish gives us starch
B Milk gives us fibre
C Fruit gives us vitamins and minerals
D Eggs give us glucose

(1)

Leave blank

(g) This diagram shows pond weed carrying out photosynthesis.

The bubbles show a gas is given off from the plant.



The gas given off in photosynthesis is

A oxygen
B nitrogen
C hydrogen
D carbon dioxide

(1)

(h) The information is from a box containing cereal.

Contents	Amount per 100 g
carbohydrate	83 g
protein	6 g
fat	3 g
energy	1800 kJ

A girl eats 200 g of cereal.

How much protein does she eat?

A 6 g
B 10 g
C 12 g
D 200 g

(1)

Leave blank

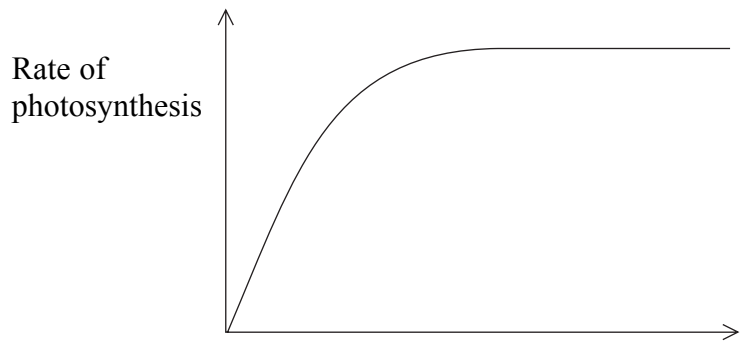
(i) Humans cannot digest fibre.

This means that fibre

A cannot pass along the intestines
B makes up most of the faeces
C creates acid conditions in the stomach
D stimulates the release of enzymes from the liver

(1)

(j) The graph shows the effect of increasing light intensity on the rate of photosynthesis.



When the light intensity increases, the rate of photosynthesis

A stays the same, then decreases
B increases, then decreases
C increases, then stays the same
D stays the same, then increases

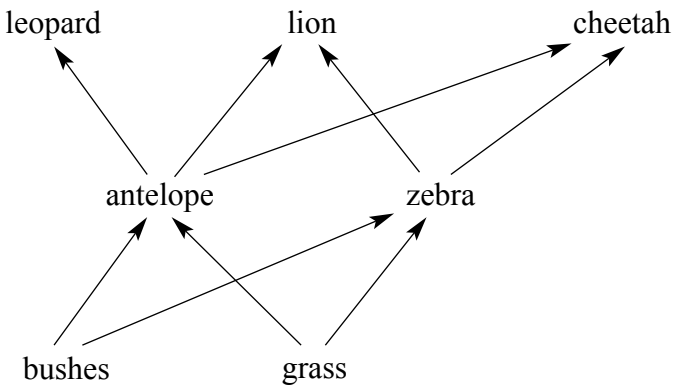
(1)

Q1

(Total 10 marks)

Leave blank

2. The diagram shows a food web.



(a) Name **one** producer in the food web.

.....

(1)

(b) Name **one** secondary consumer in the food web.

.....

(1)

(c) Using the information in the food web, draw **one** food chain with **three** organisms in it.

(2)

(d) There is a disease that has killed all zebras.

What will happen to the number of lions? Give a reason for your answer.

.....

.....

.....

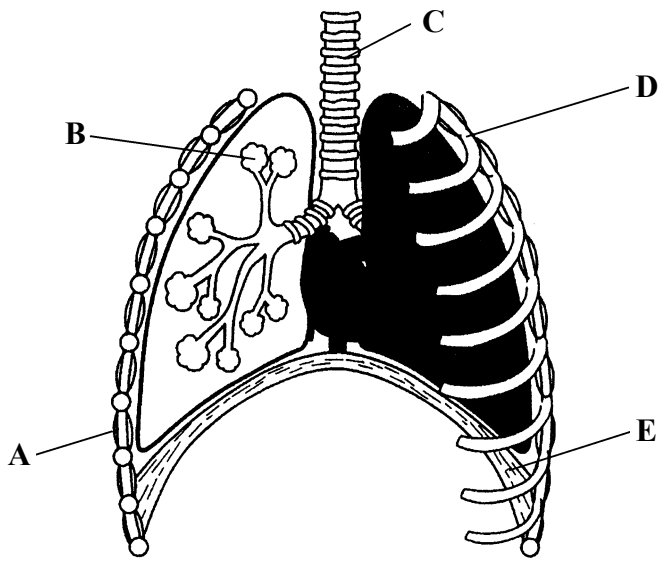
(2)

Q2

(Total 6 marks)

Leave blank

3. Here is a diagram of the lungs in the human thorax with parts labelled **A**, **B**, **C**, **D** and **E**.



Use words from the box to complete the table below.

The first one has been done for you.

alveolus	**bronchus**	**diaphragm**
intercostal muscle	**rib**	**trachea**

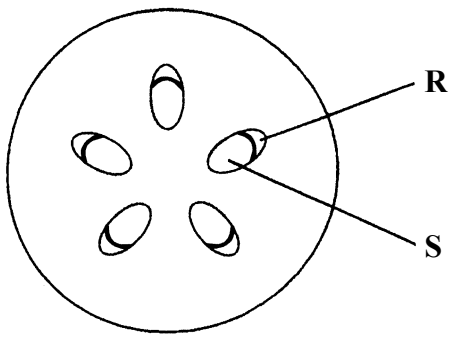
Letter	Name of part
A	intercostal muscle
B	
C	
D	
E	

Q3

(Total 4 marks)

Leave blank

4. Here is a section through a plant stem.



(a) Name the two tissues labelled **R** and **S**.

R .....

S .....

(2)

(b) Tissue **R** transports sucrose and amino acids between the leaves and other parts of the plant.

Name **two** substances transported by tissue **S**.

1 .....

2 .....

(2)

(Total 4 marks)

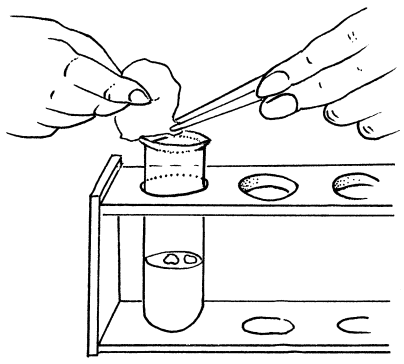
Q4

Leave blank

5. Look at the diagram. Some students are cloning plants using tissue culture.

They place small pieces of plant into several test tubes that contain nutrient jelly made with sterilised water.

Then they cover the tops of the test tubes with cotton wool.



(a) The students want to make sure that their plants are not contaminated with microorganisms.

Suggest **two** ways they could do this.

1 .....

.....

2 .....

.....

(2)

(b) Here are some statements about the plants they produce.

Tick the **two** statements that are correct.

- The plants are clones of each other ☐
- The plants have different coloured flowers ☐
- The plants are not identical ☐
- The plants have the same genes ☐

(2)

Q5

(Total 4 marks)

Leave blank

6. This question is about greenhouse gases.

(a) Fill in the spaces in the sentences below with a correct word from the box.

CFCs	**exhaust**	**respiration**	**global**
photosynthesis		**transpiration**	**rural**

(i) A major source of carbon dioxide in cities is ..... fumes from cars.

(ii) Some aerosols produce ..... when they are used.

(iii) Animals and plants release carbon dioxide during ..... .

(iv) The increase in the Earth's temperature is called ..... warming.

(4)

(b) Which process in plants removes carbon dioxide from the air?

.....

(1)

Q6

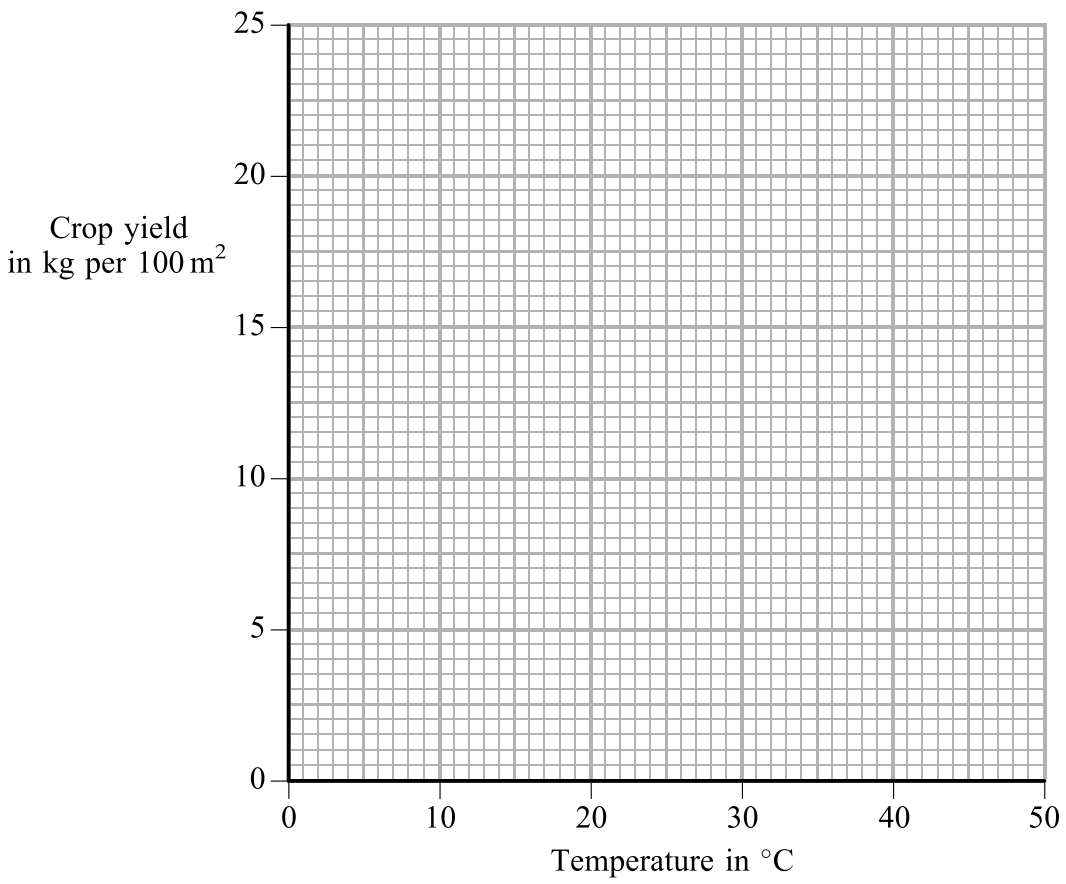
(Total 5 marks)

Leave blank

7. The table shows the effect of increasing temperature on the yield of a crop.

Temperature in °C	**Crop yield in kg per 100 m²**
10	5
20	11
30	24
40	10
50	7

(a) (i) Plot the data in the table on the grid below and join the points with straight lines.



(4)

(ii) Use your graph to find the crop yield at 25 °C.

..... kg per 100 m²

(1)

Leave blank

(iii) Describe what happens to the yield of this crop as the temperature increases.

.....

.....

.....

(2)

(b) Suggest **two** other ways that a farmer could increase the yield of a crop.

1 .....

.....

2 .....

.....

(2)

Q7

(Total 9 marks)

Leave blank

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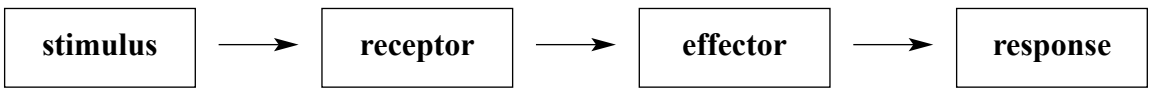
8. Animals are able to respond to changes in their environment.

(a) A coordinated response requires a stimulus, a receptor and an effector. This is shown below in a flow chart.



The brain can act as the coordinator.

(i) On the flow chart above, draw an **X** on one of the arrows to show where the brain would be.

(1)

(ii) The brain is part of the central nervous system. What other structure is also part of the central nervous system?

.....

(1)

(b) An eye is a sense organ that contains receptors.

(i) What is the name of the stimulus that enters the eye and is detected by the receptors?

.....

(1)

(ii) Name the part of the eye that contains receptors.

.....

(1)

(iii) Describe how messages travel from receptors in the eye to the brain.

.....

.....

.....

(2)

(c) Give the name of another sense organ, and the stimulus it detects.

Sense organ .....

Stimulus .....

(2)

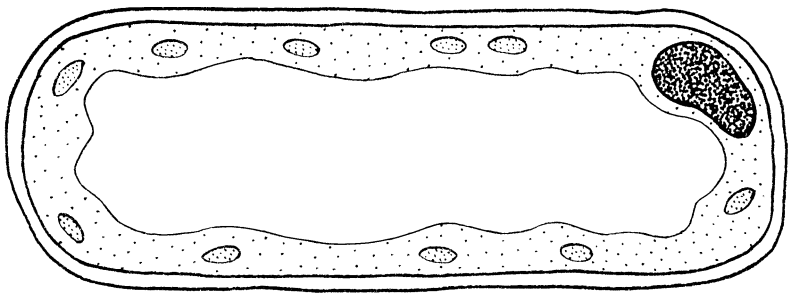
Q8

(Total 8 marks)

Leave blank

9. Plants make food in their leaves.

(a) The diagram shows a cell from a leaf.



F

(i) On the diagram, draw a line from the letter **F** to one of the structures where food is made.

(1)

(ii) Name the part of the cell where food is made.

.....

(1)

(b) To make food, plant cells need water. Water enters the plant through cells in the roots called root hair cells.

(i) In the space below, draw a root hair cell, showing how its shape would differ from the leaf cell shown in part (a).

(1)

Leave blank

(ii) Explain how the shape of the root hair cell helps it to take in water.

.....

.....

.....

.....

(2)

(iii) Describe the process by which water enters the root hair cells.

.....

.....

.....

.....

.....

.....

(3)

Q9

(Total 8 marks)

10. Living organisms share certain basic characteristics, including **nutrition** and **movement**. The table below gives descriptions of some other characteristics of living organisms.

Complete the table by filling in the gaps.

Characteristic	Description
respiration	
growth	
	producing offspring

Q10

(Total 3 marks)

Leave blank

11. A poisonous snake bites a man's toe.

The passage below describes how the snake venom travels from the toe to the brain. Use suitable words to complete the sentences in the passage.

The venom travels to the heart in the largest vein called the .....

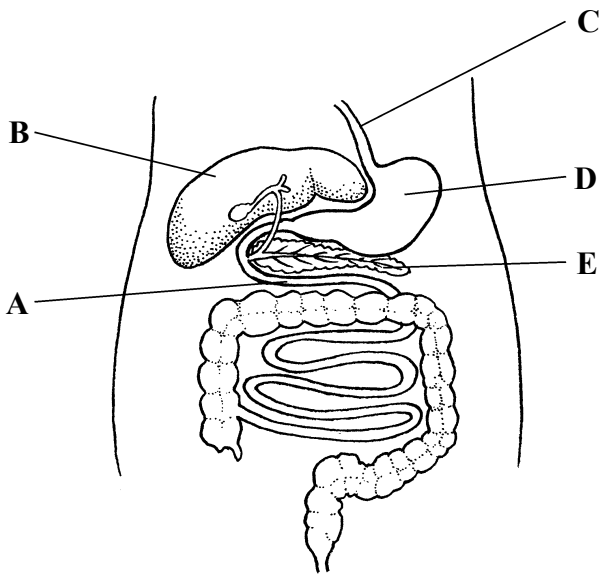
The right atrium contracts and pumps the venom through the atrio-ventricular valve into the right ..... . The muscles of this heart chamber contract and pump the venom through a ..... valve and along the ..... artery to the ..... . The venom returns from this organ to the left atrium of the heart in a vein. It then enters the chamber of the heart with the thickest wall, made of ..... tissue. This chamber pumps the blood out of the heart into the largest artery called the ..... . A branch of this blood vessel transports the venom to the brain.

Q11

(Total 7 marks)

Leave blank

12. The diagram shows part of the human digestive system.



(a) The table below lists some processes that occur in the human digestive system.

Complete the table using letters from the diagram to show where each process occurs. Write **one** letter only in each box.

Process	Letter
protein is first digested	
fat is emulsified	
bile is produced	
insulin is released	

(4)

(b) (i) Name the process by which muscles move food through the gut.

.....

(1)

(ii) What biological term describes the process of removing undigested food from the body?

.....

(1)

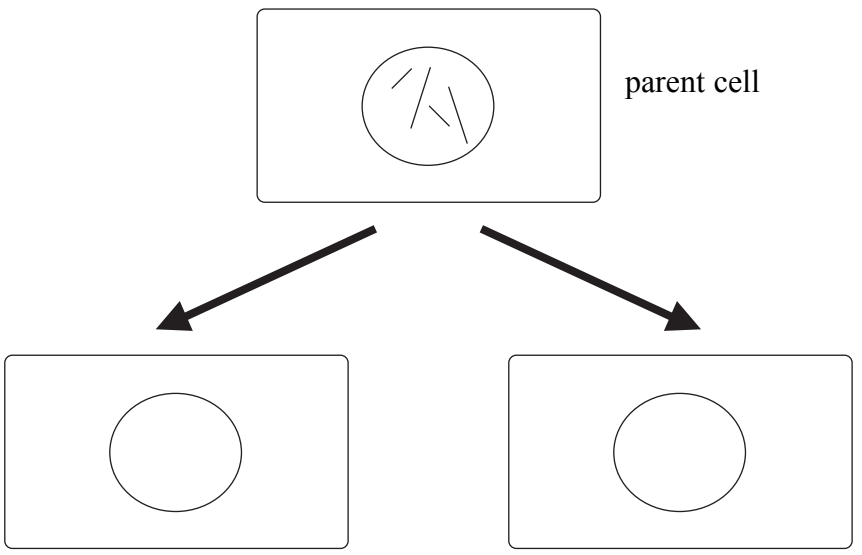
Q12

(Total 6 marks)

Leave blank

13. (a) Cells can divide by mitosis. The diagram below shows the chromosomes in a parent cell before mitosis takes place.

(i) Complete the diagram to show the chromosomes in each daughter cell.



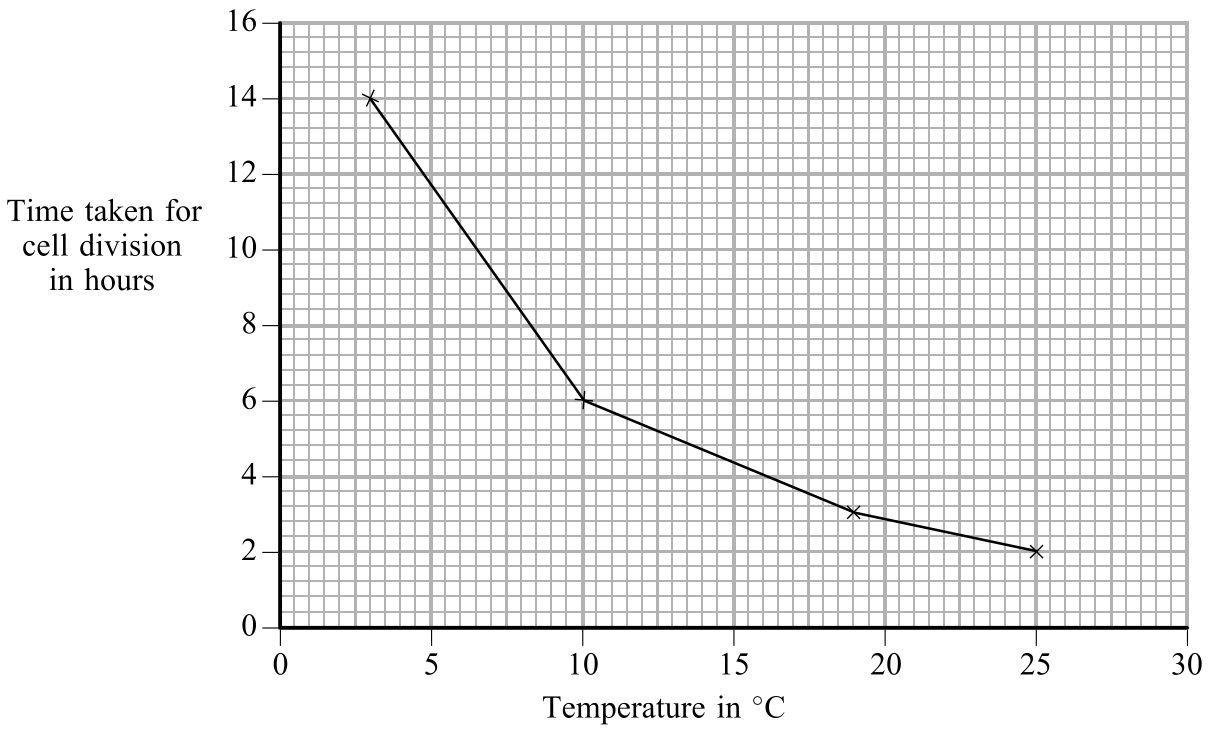
(1)

(ii) What is the diploid number of the parent cell?

.....

(1)

(b) The graph below shows the time taken for cells to divide by mitosis at different temperatures.



Leave blank

(i) How does the increase in temperature affect the time taken for cell division to occur?

.....

(1)

(ii) Starting with one cell, at 25 °C, how many cells would there be after

2 hours .....

8 hours .....

(2)

Q13

(Total 5 marks)

Leave blank

14. A river is polluted by some raw sewage. This causes changes in the number of microorganisms in the river. This in turn has an effect on the number of large fish in the river.

Describe and explain these changes.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

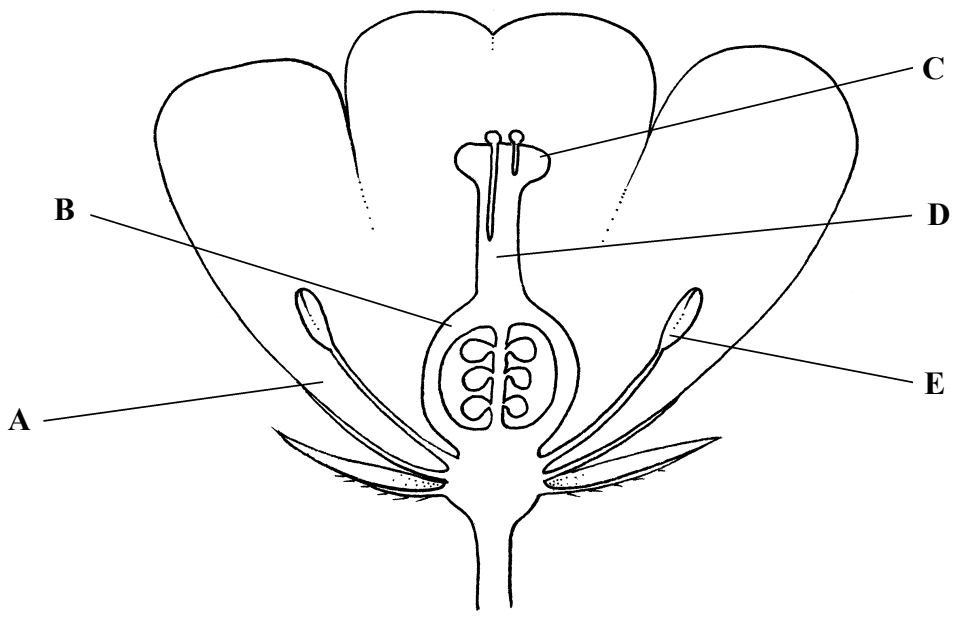
.....

Q14

(Total 5 marks)

Leave blank

15. The diagram shows a section through a flower.



(a) Name the parts labelled **A**, **B**, **C** and **D**.

A .....

B .....

C .....

D .....

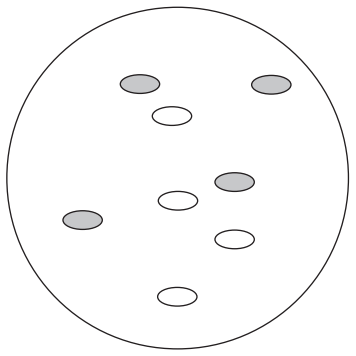
(4)

Leave blank

(b) Part **E** produces pollen. In some flowers the pollen grains contain starch.

The gene for making starch in the pollen grains has two alleles. The allele **B** for making starch is dominant and the allele **b** is recessive.

Some pollen grains were collected from one flower and tested to see if they contained starch. The diagram below shows the results seen using a light microscope.



Key pollen grain containing starch

pollen grain not containing starch

(i) Name the substance used to test for starch.

.....

(1)

(ii) If the pollen grains contain starch, what colour will they be after this test?

.....

(1)

Leave blank

(c) Pollen grains are haploid, so contain only one allele for a character.

Look at the diagram in (b) showing the pollen grains.

(i) What is the genotype of the flower that produced these pollen grains? Tick the correct answer.

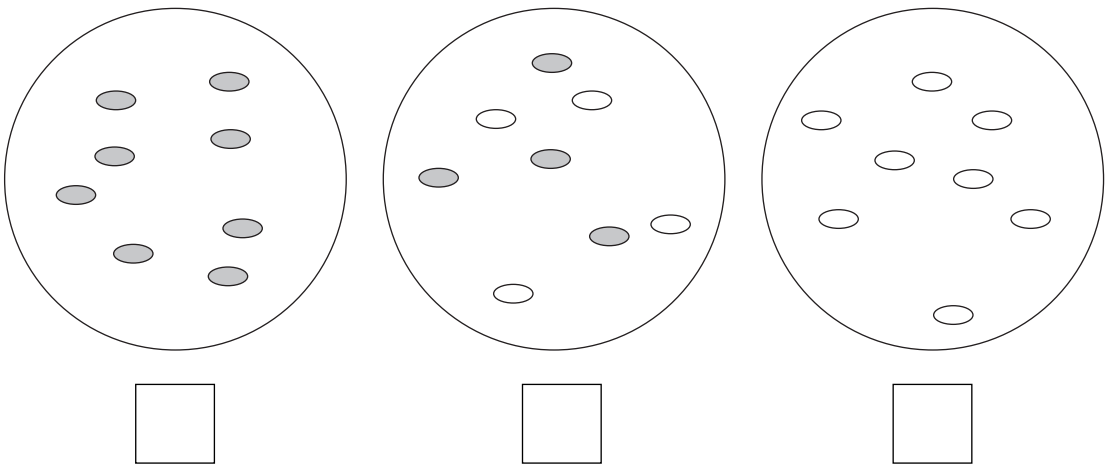
BB (homozygous dominant) ☐

Bb (heterozygous) ☐

bb (homozygous recessive) ☐

(1)

(ii) Pollen is collected from a flower that is homozygous recessive and tested for starch. Which of the following shows the results you would expect to see? Tick the box under the correct answer.



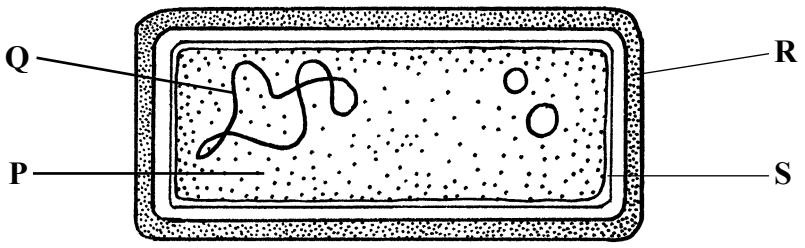
☐ ☐ ☐

(1) **Q15**

(Total 8 marks)

Leave blank

16. The diagram shows a typical bacterium, with parts labelled **P**, **Q**, **R** and **S**.



(a) (i) Which part is made from DNA?

.....

(1)

(ii) Which part is the cytoplasm?

.....

(1)

(b) *Lactobacillus* are bacteria that are used to make yoghurt. The table lists four stages, 1, 2, 3 and 4, and a description of what happens at each stage in the production of fruit-flavoured yoghurt.

Stage	Description
1	Raw milk is heated to 90 °C for 30 minutes
2	The milk is cooled to 40 °C and bacteria are then added
3	The mixture is kept at 40 °C for several hours until yoghurt is made
4	Fruit is sterilised and added to the yoghurt

Leave blank

(i) Suggest why stage 1 is needed.

.....

.....

(1)

(ii) Why must the milk be cooled during stage 2?

.....

.....

(1)

(iii) Explain why the mixture is kept at 40 °C for several hours during stage 3.

.....

.....

.....

(2)

(iv) Suggest why fruit is sterilised before being added to the yoghurt.

.....

.....

.....

(2) **Q16**

(Total 8 marks)

TOTAL FOR PAPER: 100 MARKS

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