Centre No.						Paper Reference							Surname	Initial(s)
Candidate No.						4	4	3	7	/	1	F	Signature	

Paper Reference(s)

4437/1F

Examiner's use only

Team Leader's use only

London Examinations IGCSE

Science (Double Award)

Biology

Paper 1F

Foundation Tier

Thursday 15 May 2008 – Afternoon

Time: 1 hour 15 minutes

Question Number	Leave Blank
1	
2	
3	
4	
5	
6	
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8	
9	
10	
11	
12	
Total	

Materials required for examination
Nil

Items included with question papers
Nil

Instructions to Candidates

In the boxes above, write your centre number, candidate number, your surname, initial(s) and signature.
Some questions must be answered with a cross in a box (☒). If you change your mind about an answer, put a line through the box (~~☒~~) and then mark your new answer with a cross (☒).
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 75. The marks for the parts of questions are shown in round brackets: e.g. **(2)**.
There are 20 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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Turn over

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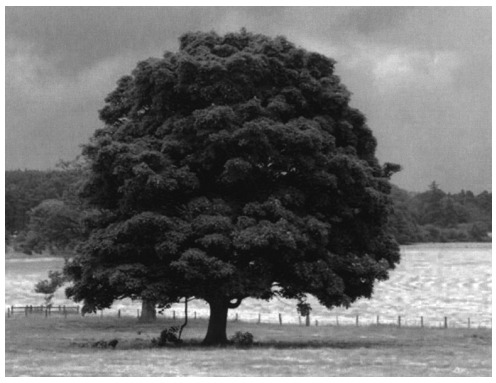
Answer ALL the questions. Write your answers in the spaces provided.

1. For each question (a) to (g), choose the correct answer. Put a cross (☒) in the correct box.

(a) The picture shows a living organism. Put a cross (☒) in the correct box.



The living organism is

A a virus ☒

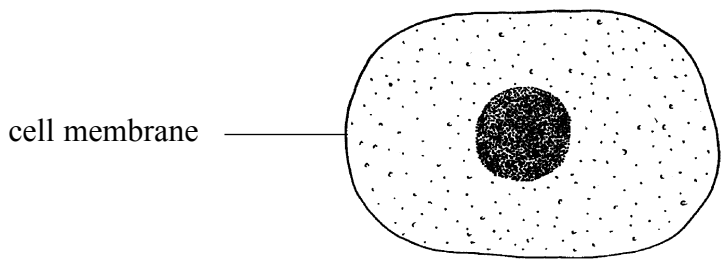
B a bacterium ☒

C a plant ☒

D an animal ☒

(1)

(b) The diagram shows a typical animal cell. The cell membrane is labelled. Put a cross (☒) in the correct box.



The cell membrane

A carries out respiration ☒

B controls what enters the cell ☒

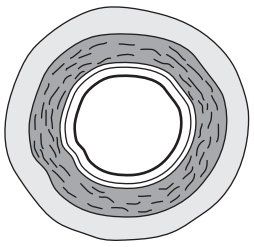
C contains genetic material ☒

D collects energy from sunlight ☒

(1)

Leave blank

(c) This is a section through a structure found in the human body. It has very thick elastic walls and carries blood away from the heart. Put a cross (☒) in the correct box.



The structure is

A an artery ☒

B a bronchus ☒

C the oesophagus ☒

D a vein ☒

(1)

(d) The skin, kidneys and lungs are all involved in

A digestion ☒

B excretion ☒

C reproduction ☒

D transport ☒

(1)

Leave blank

(e) The photograph shows three people sampling plants. Put a cross (☒) in the correct box.

The frame used to sample plants is called a

A habitat ☒

B transect ☒

C trap ☒

D quadrat ☒

(1)

(f) This is a diagram of a human sperm. Put a cross (☒) in the correct box.

The number of chromosomes in a human sperm is

A 2 ☒

B 23 ☒

C 26 ☒

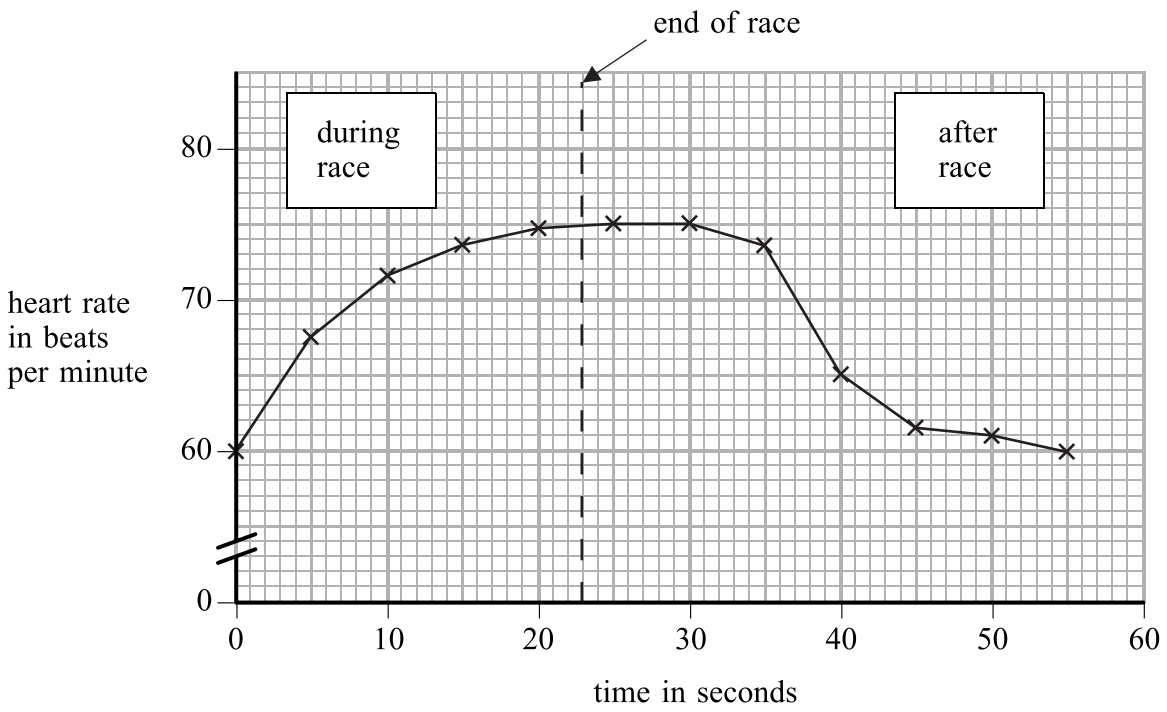
D 46 ☒

(1)

Leave blank

(g) The heart rate of an athlete was measured during and after a race.

The results are shown on the graph.



How long did it take for the heart rate to return to 60 beats per minute after the end of the race? Put a cross (☒) in the correct box.

A 23 seconds ☒

B 27 seconds ☒

C 32 seconds ☒

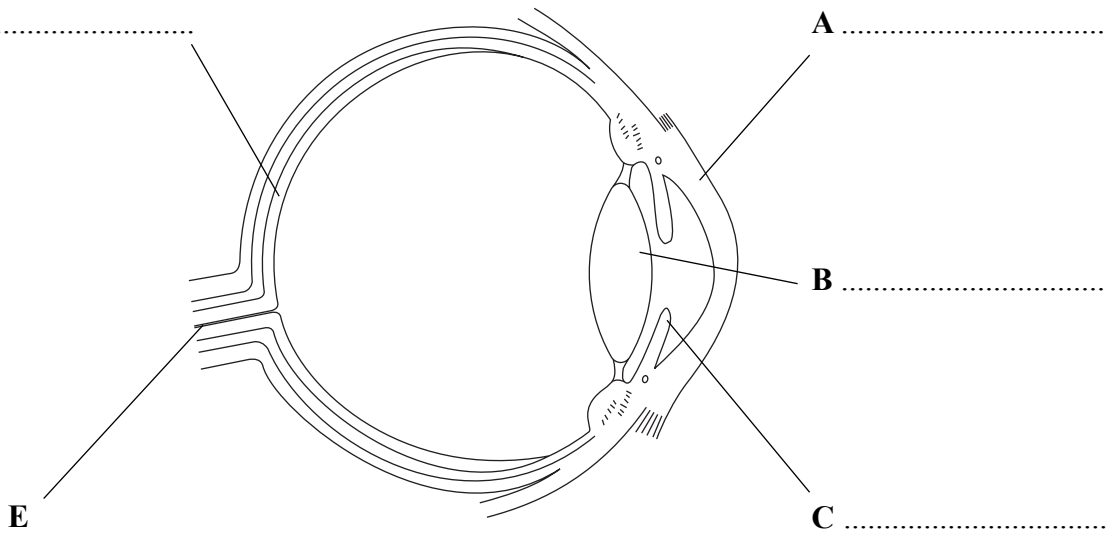
D 55 seconds ☒

(1) **Q1**

(Total 7 marks)

Leave blank

2. The diagram shows a section through an eye.



(a) Choose words from the box to label parts **A**, **B**, **C** and **D**.

cornea	**iris**	**lens**	**nerve**	**pupil**	**retina**

(4)

(b) (i) Write the letter of the part that controls the amount of light entering the eye.

.....

(1)

(ii) Write the letter of the part that contains light-sensitive cells.

.....

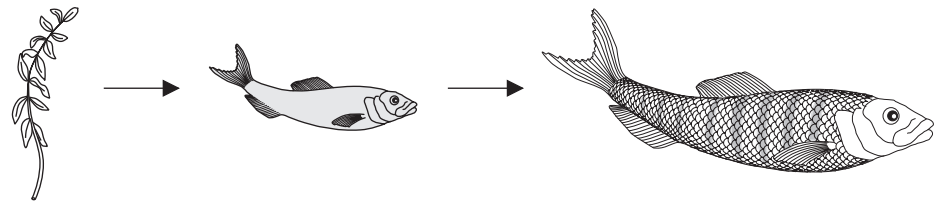
(1)

Q2

(Total 6 marks)

Leave blank

3. The diagram shows a food chain from a pond.



water plant small fish large fish

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

(2)

(b) (i) What will happen to the number of large fish if people catch many of the small fish?

.....

(1)

(ii) Give a reason for your answer.

.....

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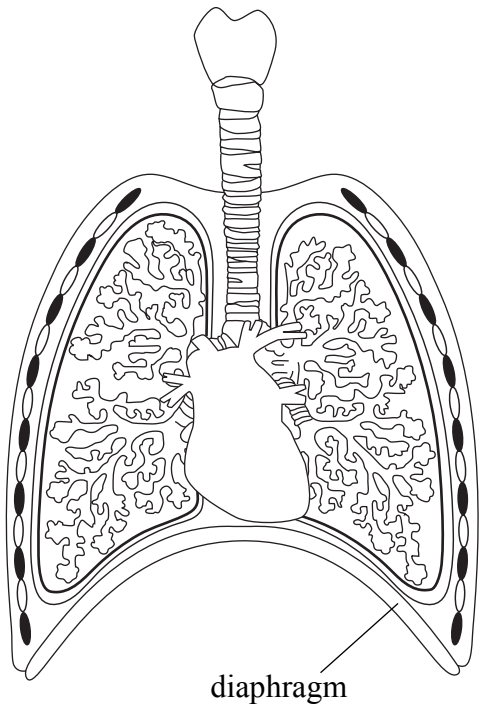
(1)

Q3

(Total 4 marks)

Leave blank

4. The diagram shows structures in the thorax.



(a) Use a line and the letter **T** to label the trachea.

(1)

(b) Use suitable words to complete the following sentences about structures in the thorax.

The trachea is supported by rings of ..... .

Intercostal muscles are found between the ..... .

Gas exchange takes place in the ..... .

(3)

(c) Describe how the diaphragm helps a person to breathe in.

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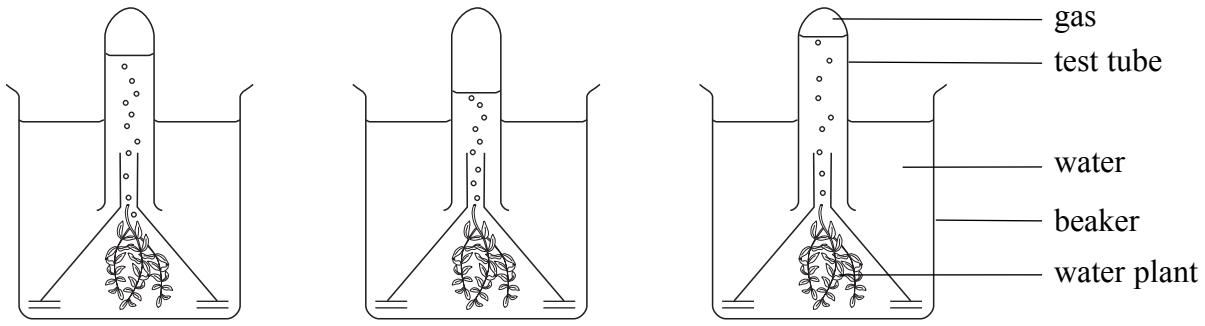
(3)

Q4

(Total 7 marks)

Leave blank

5. The diagram shows the results of an experiment to find out how temperature affects the amount of gas produced by a water plant. The plants in the beakers were identical. Each beaker was placed in the light but at a different temperature.



A **B** **C**

(a) In which beaker was most gas produced?

.....

(1)

(b) Suggest which beaker was kept at the lowest temperature. Explain your answer.

.....

.....

.....

.....

(2)

(c) Light intensity and temperature affect the amount of gas produced by these plants. Name **two other** factors that could affect the amount of gas produced.

1 .....

2 .....

(2)

Q5

(Total 5 marks)

Leave blank

6. The first dog to be produced by cloning was called Snuppy. The picture shows Snuppy sitting by his father.

(a) The table below describes the steps taken in the cloning process used to produce Snuppy. The steps are not in the correct order.

(i) Complete the table by putting the steps taken in the cloning process into the correct order. Some have been done for you.

Description of step	Order of step
Snuppy born	
egg cell enucleated (emptied)	
embryo grows	4th
nucleus from father's skin cell put into empty egg cell	
egg cell obtained	1st
embryo placed into uterus of surrogate mother	

(3)

(ii) Name the organ from which the egg cell was obtained.

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(1)

(iii) What is the difference between the empty egg cell and a normal egg cell?

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(1)

Leave blank

(b) Snuppy was a clone of his father. What is meant by the term clone?

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(2)

(c) Use the symbols XX or XY to complete the table to show the sex chromosomes of each of the animals used in cloning Snuppy. One has been done for you.

Animal	Sex chromosomes
Snuppy's father	XY
The surrogate mother	
Snuppy	

(2)

Q6

(Total 9 marks)

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7. In an area of rainforest, there were plans to cut down lots of trees (deforestation) to build a new road. Some people did not want this to happen, but some people did.

(a) Suggest **one** reason why some people wanted the road to be built.

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(1)

(b) Describe **two** biological effects that may occur as a result of deforestation.

1 .....

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2 .....

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(4) **Q7**

(Total 5 marks)

Leave blank

8. The drawing shows a flowering plant.

(a) (i) Name the part of the flower that produces pollen.

.....

(1)

(ii) Use a line and the letter **P** to label this part on the drawing.

(1)

(iii) Explain what is meant by the term **pollination**.

.....

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.....

(2)

(b) The stem and leaves of the plant grow upwards. Name **one** stimulus that makes them grow upwards.

.....

(1)

Leave blank

(c) The leaves produce glucose by photosynthesis.

(i) Write the word equation for photosynthesis.

.....

(2)

(ii) Describe how the structure of the leaf is adapted to help obtain the gas required for photosynthesis.

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(2) **Q8**

(Total 9 marks)

Leave blank

9. John ate some rice. The rice contained starch.

Describe how the starch is broken down in the digestive system.

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Q9

(Total 6 marks)

Leave blank

10. People with diabetes may not produce enough insulin and so are unable to control their blood glucose level. To overcome this, they inject themselves with insulin in the leg.

The passage below describes how the injected insulin travels from the leg to the liver. Use suitable words to complete the sentences in the passage.

The insulin travels to the heart in a blood vessel called the …….,

the largest vein in the body. Blood enters a chamber called

the right ……., and passes to the right ventricle before being

pumped in the pulmonary artery to the ……. . Backflow of

blood is prevented by atrio-ventricular and semilunar ……. . The

blood containing insulin returns to the heart in the pulmonary vein. It then leaves the

heart in the ……., the largest artery in the body. Finally, the

insulin is taken into the liver by the ……. artery. When insulin

reaches the liver cells it causes the conversion of ……. into an

insoluble carbohydrate called ……. .

Q10

(Total 8 marks)

Leave blank

11. The techniques of selective breeding and micropropagation (tissue culture) can be used together to produce large numbers of plants with desired characteristics.

(a) The table shows the steps taken to produce plants using selective breeding.

Complete the table by using numbers to show the correct order of the steps.

Step	Order of step
repeat crosses for several generations	
cross parent plants to produce more offspring	
identify parent plants with desired characteristics	
select offspring with desired characteristics	

(3)

(b) Give **two** reasons why micropropagation (tissue culture) is a useful technique to use after a selective breeding programme.

1 .....

.....

.....

2 .....

.....

.....

(2)

Q11

(Total 5 marks)

Leave blank

12. The table below shows the crop yield of three different crops when grown in soil and in liquid fertiliser.

Crop grown in	Crop yield		
	Tomatoes in kg per plant	**Potatoes in tonnes per hectare**	**Rice in kg per hectare**
soil	5.4	12.1	551
liquid fertiliser	9.0	26.3	1652

(a) Calculate the percentage increase in the growth of tomatoes in liquid fertiliser compared to those grown in soil. Show your working.

Answer .....

(2)

(b) Suggest why the growth of all the crops was better in liquid fertiliser than it was in the soil.

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(2) **Q12**

(Total 4 marks)

TOTAL FOR PAPER: 75 MARKS

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