

Centre No.						Paper Reference (complete below)	Surname		Initial(s)
Candidate No.						/	Signature		

Paper Reference(s)
1522/1F 1520/1F

Examiner's use only

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Edexcel GCSE

Team Leader's use only

Science: Double Award A [1522]

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Paper 1F

Biology A [1520]

Paper 1F

Foundation Tier

Monday 6 June 2005 – Afternoon

Time: 1 hour 30 minutes

Question Number	Leave Blank
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
Total	

Materials required for examination Nil Items included with question papers Nil



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Instructions to Candidates

In the boxes above, write your centre number, candidate number, the paper reference, your surname, initial(s) and signature.
 The paper reference is shown above. If more than one paper reference is shown, you should write the one for which you have been entered.
 Answer **ALL** questions in the spaces provided in this book.
 Show all stages in any calculations and state the units. Calculators may be used.
 Include diagrams in your answers where these are helpful.

Information for Candidates

The marks for the various parts of questions are shown in round brackets, e.g.: (2).
 This paper has 12 questions. There are three blank pages.

Advice to Candidates



This symbol shows where the quality of your written answer will also be assessed.

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edexcel

Turn over

1. Draw **one** line from each blood part to its function.

blood part

function

red blood cells •

• help clot the blood

white blood cells •

• transports urea

platelets •

• transport oxygen

plasma •

• destroy bacteria

(Total 3 marks)

Q1



2. Trevor is going to eat a boiled egg. It contains mainly protein and fat.



Use words from the box to complete the following sentences.

amino acids	fats	glucose	mouth
glycerol	large	small	stomach

In Trevor's digestive system, a protease enzyme will digest the protein into This takes place in his

The egg is then digested further in his intestine, where the enzyme lipase digests the into fatty acids and

(Total 5 marks)

Q2



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3. Some people have blue eyes. Some others have brown eyes.

Eye colour is an inherited characteristic.

(a) What is meant by an **inherited characteristic**?

.....

(2)

(b) B is the dominant allele for brown eyes.

b is the recessive allele for blue eyes.

(i) Complete the diagram below.

		father	
		B	b
mother	B		
	b		

(2)

(ii) What is the colour of the father's eyes?

.....

(1)

(iii) What is the ratio of brown-eyed children to blue-eyed children?

.....

(1)

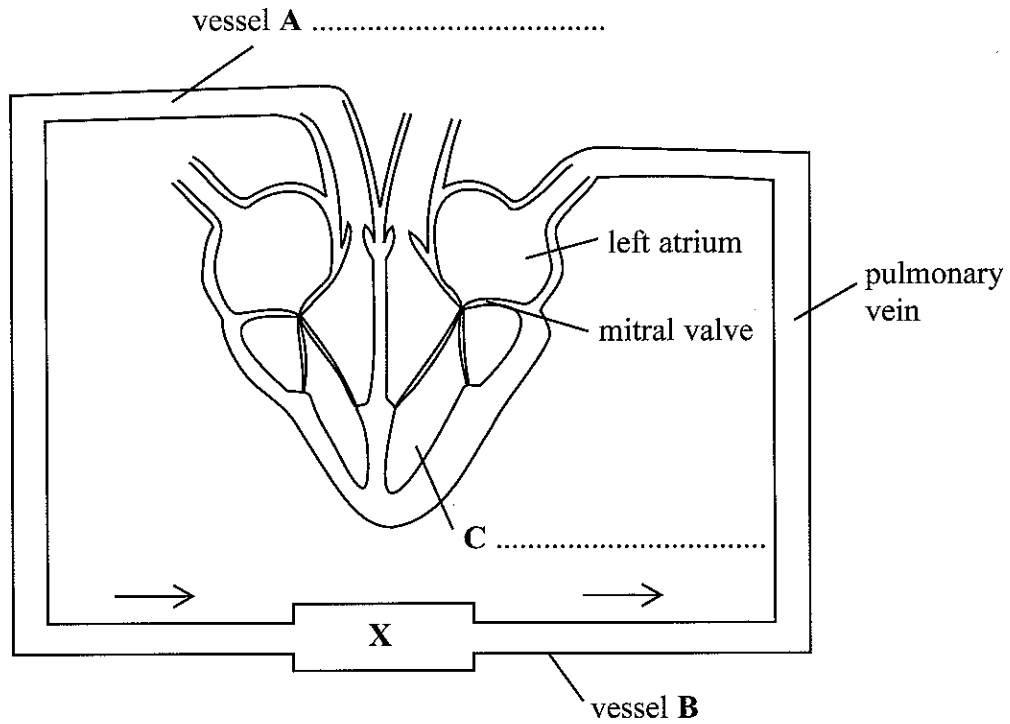
(Total 6 marks)

Q3

TURN OVER FOR QUESTION 4



4. The diagram shows the human heart during a heartbeat. Blood vessels which take blood to and from **X** are included.



(a) Label vessel **A** and chamber **C**. (2)

(b) Name **X** (1)

(c) Name the chamber of the heart which contracts to move blood into organ **X**.
..... (1)



(d) Complete the table to show the relative amounts of oxygen and carbon dioxide in blood vessel A compared to blood vessel B.

Write **one** word in each box from the list below

more

less

equal

	in vessel A	in vessel B
relative amount of oxygen in blood		
relative amount of carbon dioxide in blood		

(2)

(e) (i) What is the function of a valve?

.....
 (1)

(ii) The mitral valve in the diagram is closed.

Explain how this valve is opened.

.....

 (2)

(f) The heart is supplied with blood by the coronary artery.

Eating a lot of animal fat can have an extremely damaging effect on this artery.

Explain how damage to this artery affects the working of the heart.

.....

 (2)

(Total 11 marks)

Q4



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5. The table describes the stages of a selective breeding programme to produce cows which give more milk. The stages are in the wrong order.

stage	description
A	Young female calves are mated then checked to find out which ones give most milk.
B	Cattle to be parents are selected from herds with high milk yields.
C	Calves are born.
D	The selected cattle are mated.
E	The best young females are then used to breed more cows.

Write **one** letter in each box to show the correct order.

The first one has been done for you.

	1st	2nd	3rd	4th	5th
Letter	B				

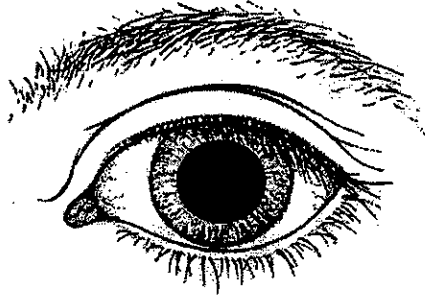
(Total 4 marks)

Q5

TURN OVER FOR QUESTION 6



6. The diagram shows a human eye.



(a) On the diagram above, label

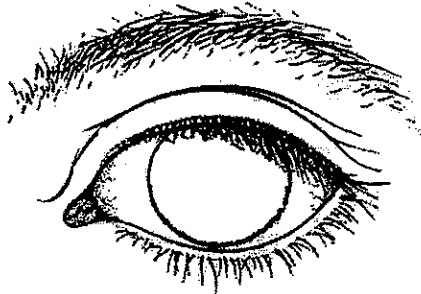
(i) the pupil

(ii) the iris

(2)

(b) A bright light is shone into the eye and it changes very quickly.

(i) Complete the diagram below to show the change.



(1)

(ii) Why is it important for this change to take place?

.....

.....

(2)



(iii) What is the name of this type of fast reaction?

.....
(1)

(c) Complete the sentences.

Information from our senses is taken to the central nervous system (CNS).

The central nervous system includes the and the

.....
(2)

Q6

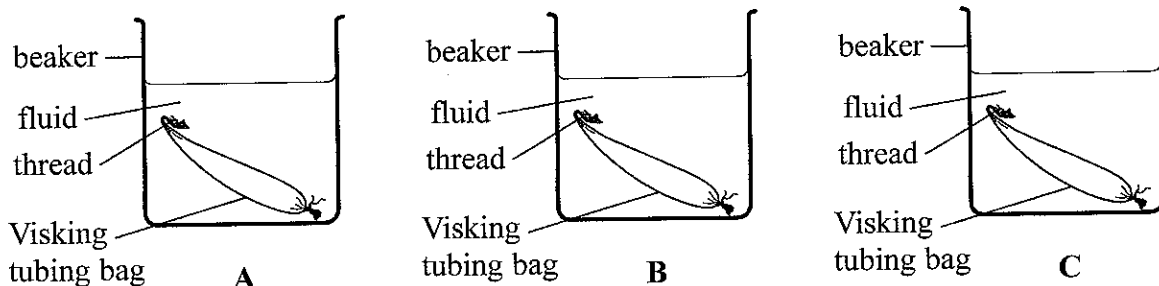
(Total 8 marks)

TURN OVER FOR QUESTION 7



7. Billy filled three Visking tubing bags with dilute sugar solution and sealed the ends with thread.

Each bag was put into one of three beakers A, B and C. Each beaker contained either concentrated sugar solution or dilute sugar solution or water.



After 30 minutes each bag was removed from each beaker then weighed.



The results are shown in the table below.

mass of Visking tubing bag at start (g)	beaker	mass of Visking tubing bag after 30 minutes (g)	change in mass
12.0	A	12.0	0.0
12.0	B	15.8	+3.8
12.0	C	8.2	

(a) The change in mass after 30 minutes of bag C is not included in the table.

Work out this value and write your answer in the table.

(2)

(b) Use the results to work out which fluid was in which beaker.

Write the letter of the correct beaker in the box next to each fluid.

concentrated sugar solution

beaker

dilute sugar solution

beaker

water

beaker

(2)



(c) Explain why the Visking tubing bag in beaker **B** increased in mass after being in fluid for 30 minutes.

.....
.....
.....
(2)

(d) Explain why the Visking tubing bag in beaker **A** did not change in mass after 30 minutes.

.....
.....
(1)

(e) What property of a cell membrane is demonstrated by the Visking tubing?

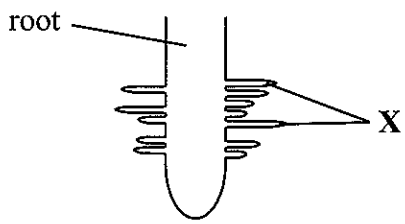
Give a reason for your answer.

property of cell membrane

reason

.....
(2)

(f) The diagram shows the end of a root.



(i) Name **X**.

.....
(1)

(ii) Explain how **X** help in the absorption of water from soil.

.....
.....
(2)

(Total 12 marks)

Q7



8. (a) (i) Smoking tobacco causes lung disease. Warnings are given on cigarette packets.

SMOKING KILLS

**SMOKING CAUSES
FATAL DISEASES**

TOBACCO SERIOUSLY DAMAGES HEALTH

Name **two** lung diseases that can be caused by smoking tobacco.

1

2

(2)

(ii) Some people find it hard to stop smoking, even though they want to.

Explain why.

.....

.....

.....

(2)



(b) Drivers should not drive after drinking alcohol.



Explain the reasons for this warning.



.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(4)

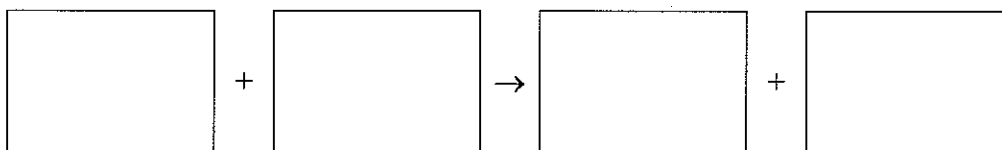
(Total 8 marks)

Q8

TURN OVER FOR QUESTION 9

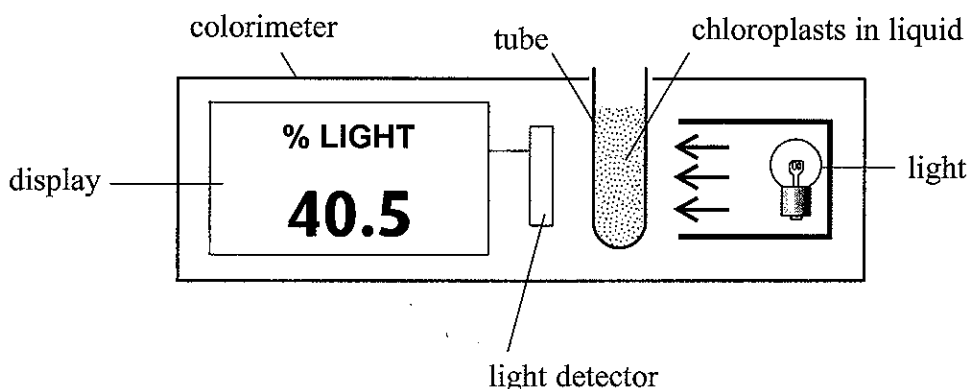


9. (a) Complete the word equation for photosynthesis by writing the names of the substances in the boxes below.



(2)

- (b) Chloroplasts were removed from leaves and placed in a liquid that allows them to photosynthesise normally. The liquid and chloroplasts were placed in a tube then into an instrument known as a colorimeter. The light in the colorimeter was shone on the tube and the amount of light which passed through was measured. The percentage of light which passed through the tube containing chloroplasts was shown on the display.



- (i) What percentage of light was absorbed by the chloroplasts and liquid?

..... (1)

- (ii) What is the role of chloroplasts during photosynthesis?

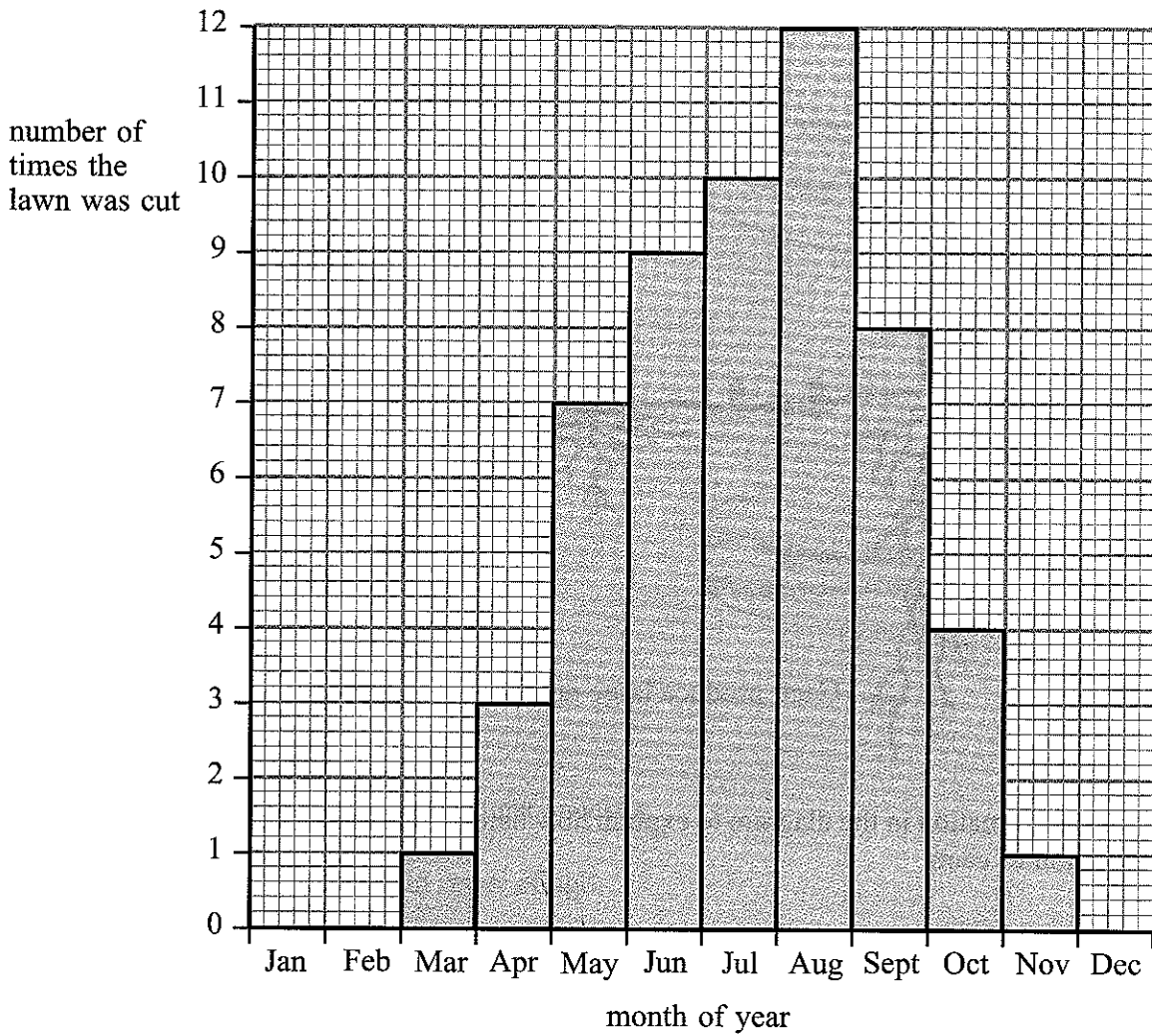
..... (1)

- (c) Name **one** mineral needed for the plant to make chlorophyll.

..... (1)



(d) The bar graph shows the number of times a lawn in Britain was cut during one year.



(i) How many times was the lawn cut during the year?

.....
(1)

(ii) Explain why it was not necessary to cut the grass in January, February and December.

.....

(2)

(iii) Explain why the grass was cut most often during July and August.

.....

(2)

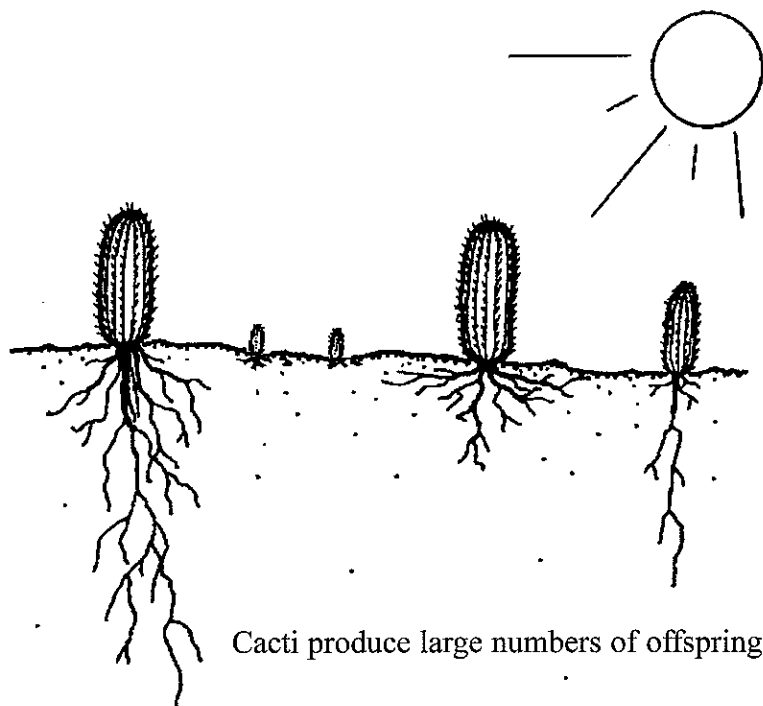
(Total 10 marks)

Q9





10. Cacti are plants which live in dry conditions where water is only found deep down in the soil.



(a) Use the information in the diagram to explain how natural selection might change this population of cacti.

.....

.....

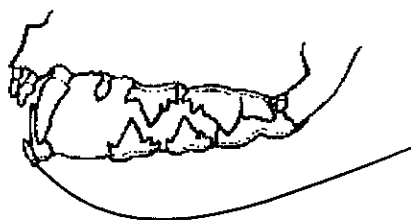
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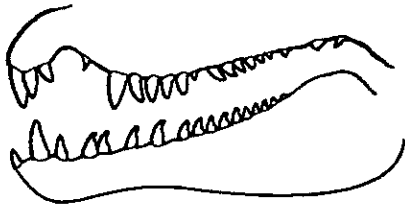
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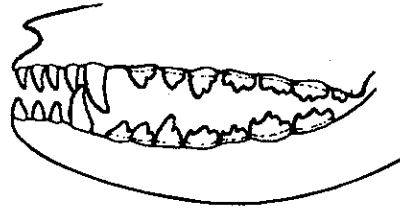
(b) The diagram shows the jaws of a modern cat.



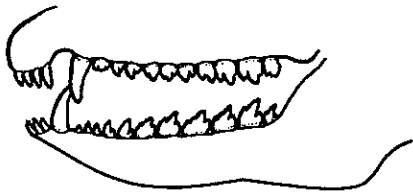
The diagrams below show jaws from four fossil skulls of extinct animals thought to be ancestors of the modern cat.



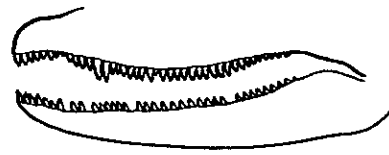
A



B



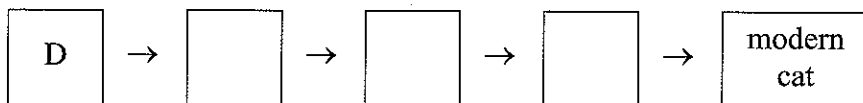
C



D

(i) D is the jaw of the oldest cat ancestor.

Put the other jaws in order of age.



(2)

(ii) Explain your answer to part (i).

.....

.....

.....

(2)

(Total 8 marks)

Q10

TURN OVER FOR QUESTION 11



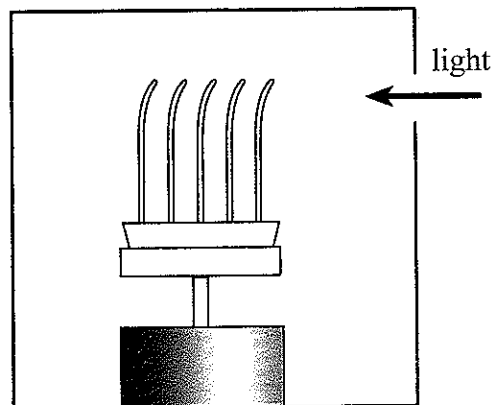
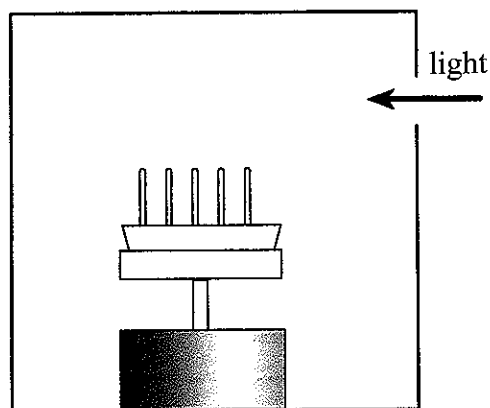
11. Mike investigated the effect of shining light onto oat seedlings growing in pots. He used a turntable which could rotate the pots. In each part of the investigation light was shone from **one side only**.

The diagram shows the apparatus at the start and the results of each experiment after seven days.

at the start

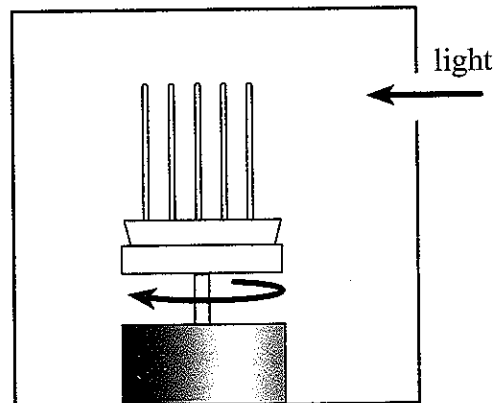
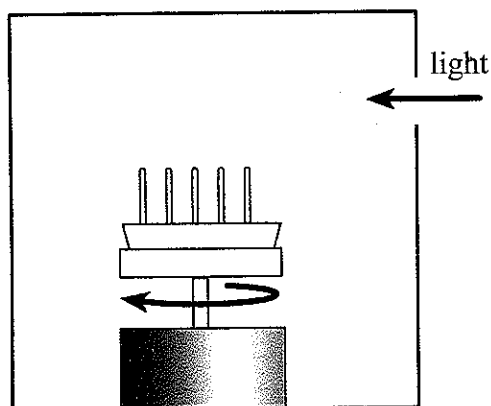
after 7 days

experiment 1



The turntable was switched off, so did not rotate.

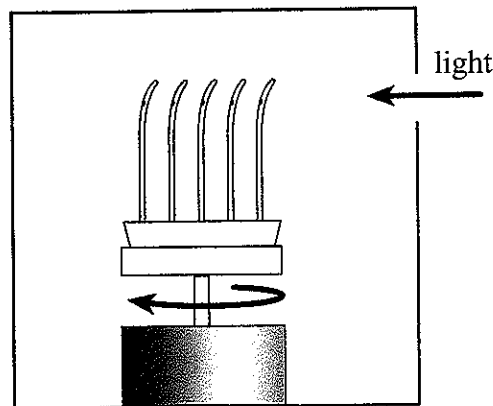
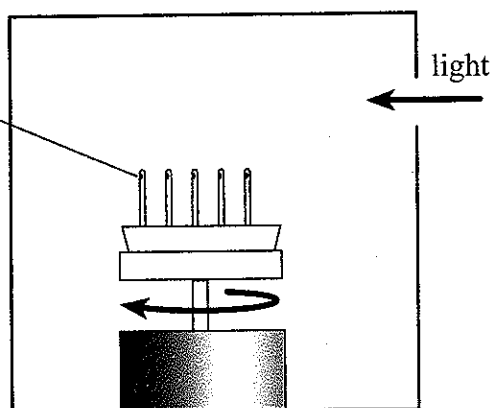
experiment 2



The turntable was switched on, so it rotated.

experiment 3

auxin was pasted on to one side of each seedling



The turntable was switched on, so it rotated.



(a) In which experiments did light shine equally on all sides of the seedlings?

.....
(1)

(b) (i) Compare the differences in growth of the seedlings in experiment 1 and experiment 2.

.....
.....
.....
.....
(2)

(ii) Suggest an explanation for the differences.

.....
.....
.....
(1)

(c) Describe, and give the reason for, the response of the oat seedlings in experiment 3.

description

reason

.....
(2)

(d) Give **two** commercial applications of auxin on plants.

.....
.....
.....
.....
(2)

(Total 8 marks)

Q11



12. Rosalind Franklin was a scientist who worked in the 1950s.

She was trying to find out about the structure of DNA. Genes are made of DNA.



Courtesy of Cold Spring Harbor Laboratory Archives



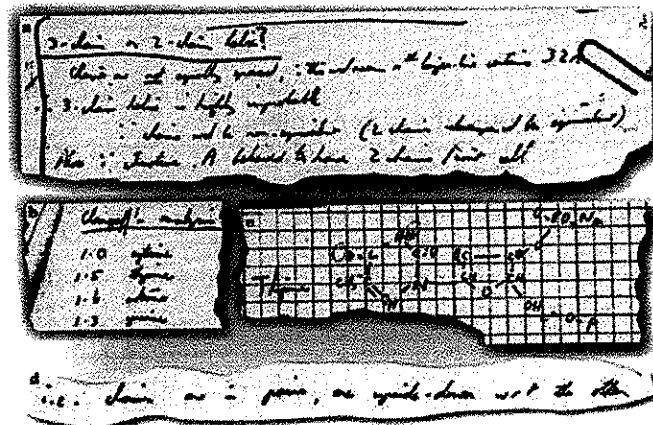
At the same time, several other scientists including James Watson and Francis Crick, were also trying to find the structure of DNA.

(a) Where are genes found in a cell?

..... (1)

(b) Here are some of the notes that Rosalind Franklin made while she was working.

You do not need to be able to read them.



(i) Suggest why she repeated her experiments.

.....
.....
(1)

(ii) Suggest **one** way in which Rosalind Franklin might have informed other scientists about her work.

.....
.....
(1)

(c) When they heard about Rosalind Franklin's work, Watson and Crick thought that they had made a mistake in their own work.

(i) Suggest **two** things that a scientist could do to find out if there is a mistake in their work.

1

.....

2

.....
(2)

(ii) Many people think that Watson and Crick would not have found out the structure of DNA if Rosalind Franklin had not been doing similar work.

Suggest **two** ways in which her work may have helped them.

1

.....

2

.....
(2)

(Total 7 marks)

Q12

TOTAL FOR PAPER: 90 MARKS

END



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