

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

Paper Reference(s)

1522/1F 1520/1F

Edexcel GCSE

Science: Double Award A [1522]

Paper 1F

Biology A [1520]

Paper 1F

Foundation Tier

Wednesday 6 June 2007 – Afternoon

Time: 1 hour 30 minutes

Examiner's use only

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Team Leader's use only

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Question Number	Leave Blank
1	
2	
3	
4	
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8	
9	
10	
11	
12	
13	
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, 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 13 questions. There are two blank pages.

Advice to Candidates



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

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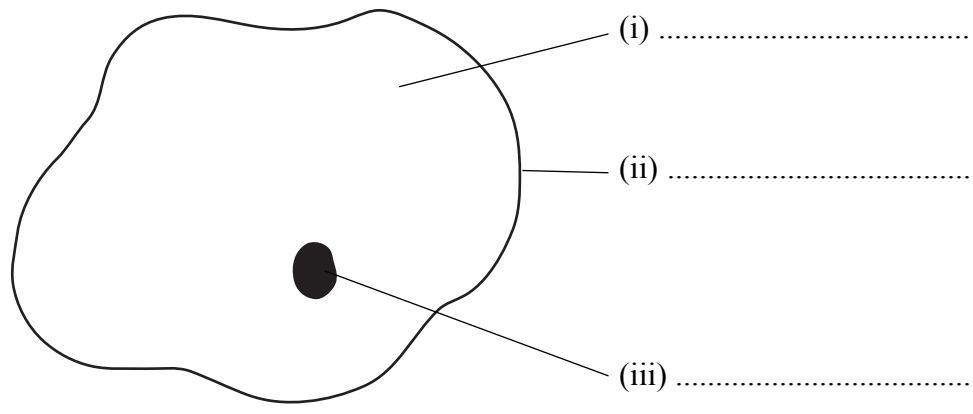
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1. (a) Complete the labels on the diagram of a human cheek cell.



(3)

(b) Name a type of cell in humans that does **not** have part (iii).

.....
(1)

(c) Name a type of cell in humans that has half the number of chromosomes of a cheek cell.

.....
(1)

(Total 5 marks)

Q1



Leave
blank

2. Draw **one** line from each part of the alimentary canal to its function.

small intestine

most water is absorbed

stomach

produces enzymes and hormones

pancreas

produces enzymes and acid

large intestine

most food is absorbed

Q2

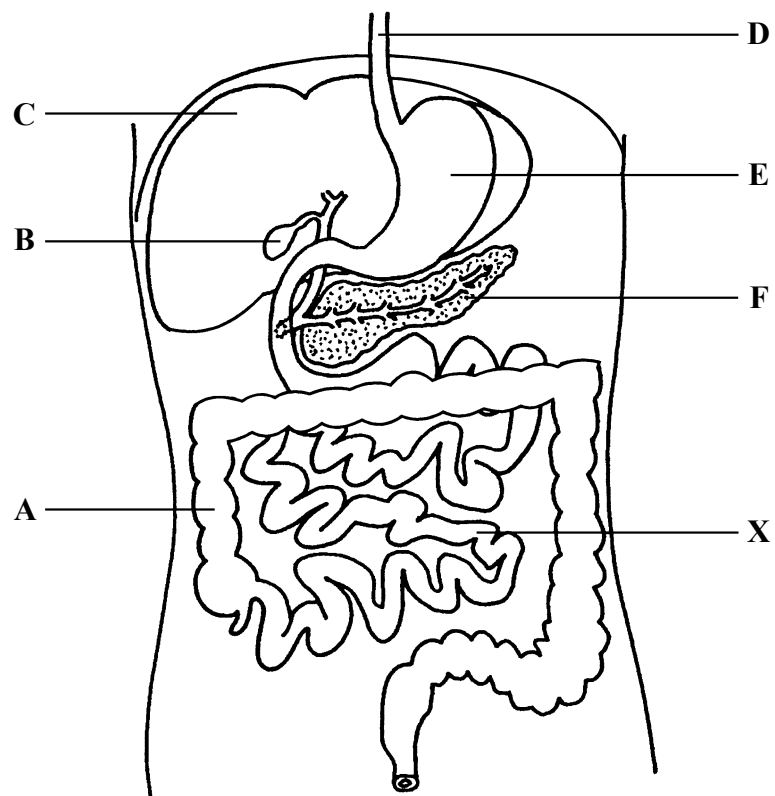
(Total 3 marks)

3

Turn over



3. The diagram shows some parts of the human alimentary canal.



(a) Use the letters to answer the following.

(i) Which part is the pancreas?..... (1)

(ii) Which part makes bile? (1)

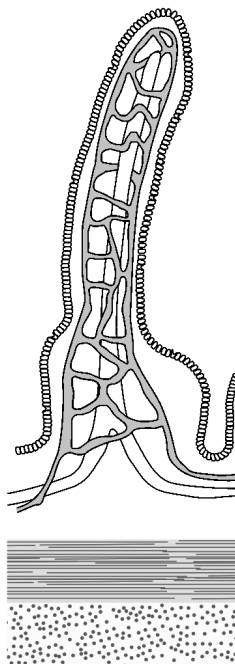
(iii) Which part stores bile?..... (1)

(b) Bile has two main functions.
State **one** of these functions.

..... (1)



(c) Food that has been digested is absorbed through the walls of part X.
The diagram shows a microscopic structure from the inside surface of X.



(i) Name this structure.

..... (1)

(ii) Describe **two** features of this structure that help it absorb food more quickly.

1

.....

2

.....

(2)

Q3

(Total 7 marks)



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4. The boxes show some pollutants and the effects that they can have.

Draw **one** line from each pollutant to its possible effect.

pollutant

possible effect

raw sewage

puts disease causing microbes into waterways

nitrates and phosphates

causes rain to become acidic

carbon monoxide

destroys the ozone layer

sulphur dioxide

reduces the amount of oxygen blood can carry

causes a rapid growth of algae in waterways

Q4

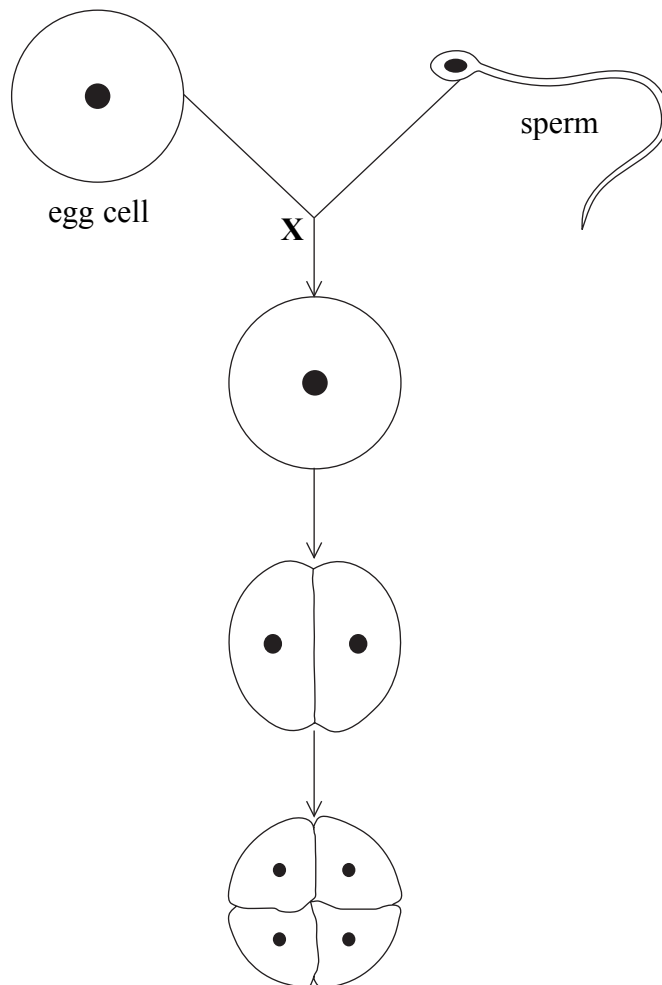
(Total 4 marks)



5. (a) Where are chromosomes found in human cells?

..... (1)

(b) The diagram shows cells during reproduction in humans.



(i) Underline the correct word in the box to complete the following sentence.

Sperm and egg cell are both

gametes
genes
zygotes

(1)



(ii) Name the process that happens at X.

..... (1)

(iii) What is the diploid number of chromosomes in human cells?

..... (1)

(iv) How many cells in the diagram are diploid?

..... (1)

(Total 5 marks)

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Q5



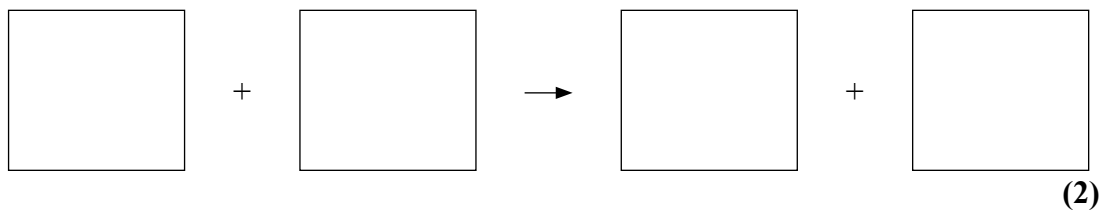
N 2 5 7 8 5 A 0 9 2 4

6. It is planned to introduce a new crop into Britain. *Miscanthus*, or elephant grass, grows to four metres in a year but only uses small amounts of fertiliser. It is hoped to burn it in power stations to make electricity.



(Source: <http://bioenergy.ornl.gov/gallery/index.html>)

- (a) The energy for this rapid growth is obtained by photosynthesis. Complete the word equation for photosynthesis.



- (b) Elephant grass does not need much fertiliser, so less is washed off from fields. Suggest how this benefits the environment.

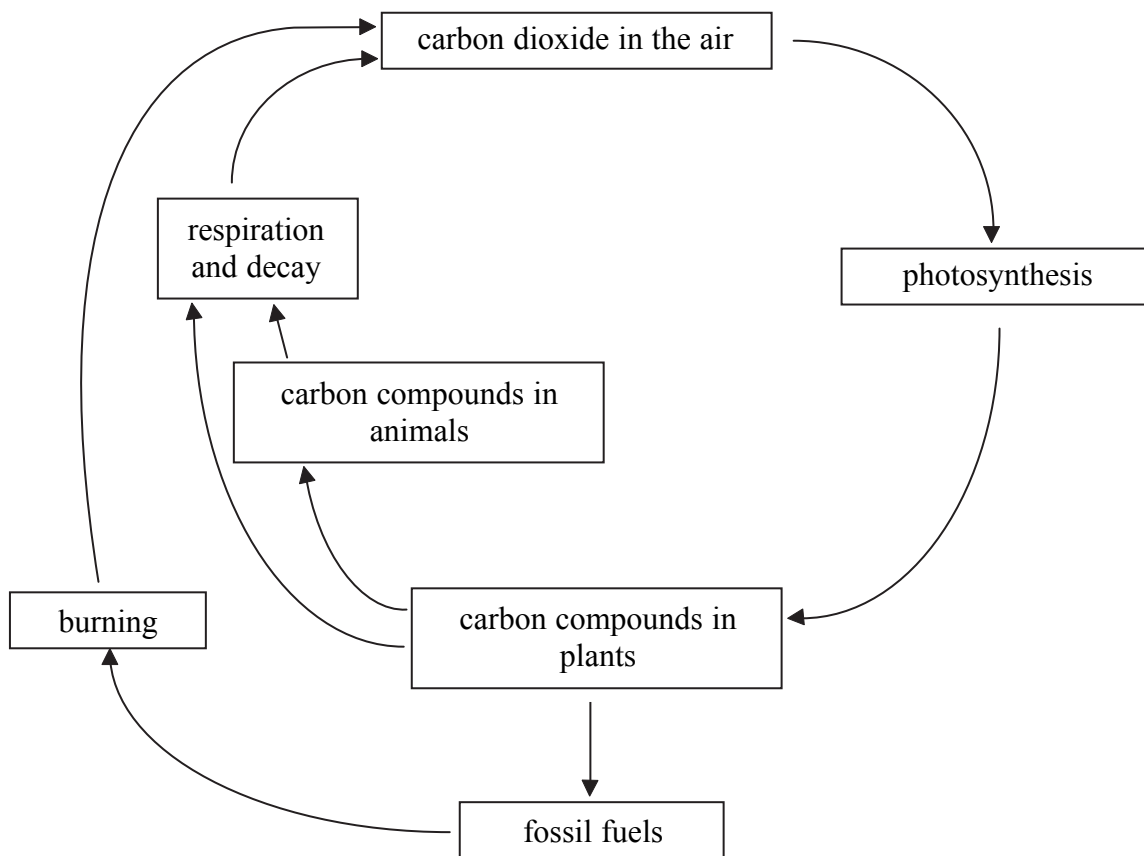
.....

.....

(1)



(c) The diagram shows the carbon cycle.



Use the diagram to help you to explain why

(i) burning elephant grass is preferable to burning oil.

.....
.....

(1)

(ii) burning elephant grass has no net effect on global warming.

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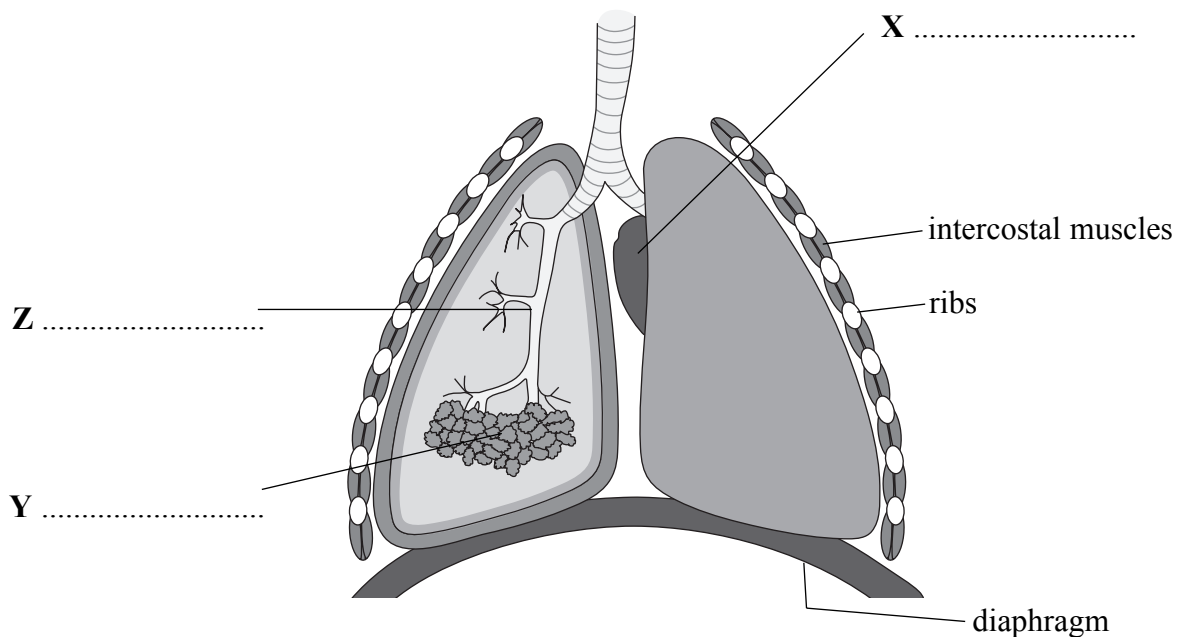
(2)

(Total 6 marks)

Q6



7. The diagram shows a section through the human chest.



(a) Label parts X, Y and Z.

(3)

(b) When you breathe in, what do the following parts do?

(i) intercostal muscles

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

(1)

(ii) ribs

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

(1)

(iii) diaphragm

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

(1)



(c) (i) What happens to the volume of your chest when you are breathing in?

..... (1)

(ii) What effect does this change in volume have on the pressure of the air inside your chest?

..... (1)

(Total 8 marks)

Leave
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Q7



N 2 5 7 8 5 A 0 1 3 2 4

8. Alex cut up a potato into small equal size chips. She then measured the masses of the chips. The chips were put into different concentrations of sugar solution. Alex left them for 3 hours, then dried them on kitchen roll and measured their masses again. She worked out the percentage change in mass of the chips.

These are her results.

percentage concentration of sugar solution	percentage change in mass of potato chips
5	+12
10	+7
15	+2
20	-3
25	-8

- (a) Name the process that causes the change in mass of the chips.

.....
(1)

- (b) Use the results from the table to estimate the percentage concentration of the sugar solution that would cause no change in mass of the potato chips.

.....
(1)

- (c) (i) Alex noticed that some of the chips had become bigger and stiffer. Which percentage concentration of sugar solution made the chips biggest?

.....
(1)

- (ii) Why did Alex dry the chips on kitchen roll before measuring their masses again?

.....
(1)



Leave blank

(d) Explain why some of the chips had gained mass and some of them lost mass.

.....

.....

.....

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.....

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.....

.....

(4)

(e) Use words from the box to complete the sentence.

cell wall	floppy	osmosis
water	wilted	

(i) The potato chips which had lost mass were

(1)

(ii) The chips had lost water by

(1)

(iii) Plant stems that have lost water have

(1)

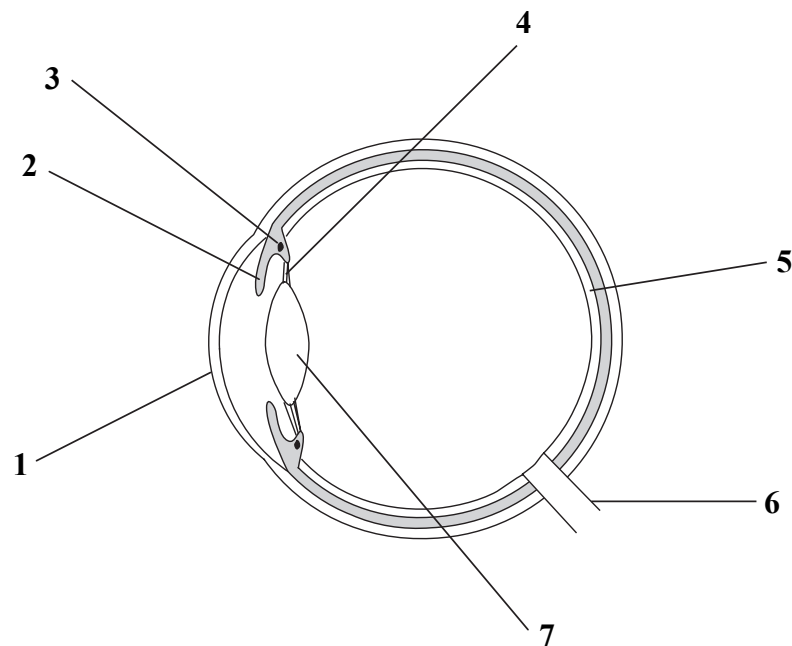
Q8

(Total 11 marks)

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9. The diagram shows a section through a human eye.



- (a) Which part is sensitive to light? (1)
- (b) Which part contains most receptors? (1)
- (c) Which two parts **must** be transparent? and (1)
- (d) Which part alters the amount of light reaching 5? (1)

(Total 4 marks)

Q9



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10. Cigarette packets have a government health warning printed on them.



Describe how smoking cigarettes damages human health.



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(Total 7 marks)

Q10

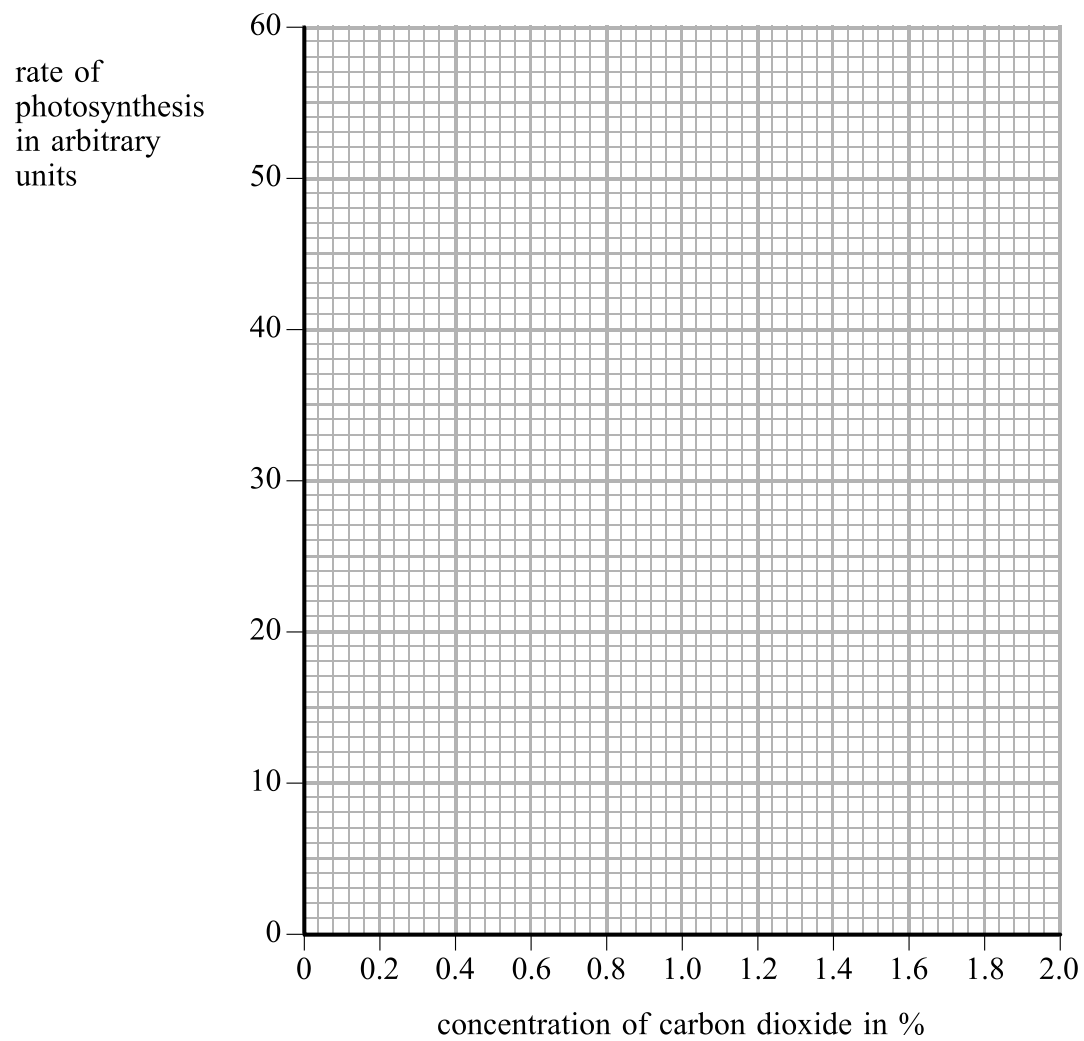


N 2 5 7 8 5 A 0 1 7 2 4

11. A student carried out an investigation to find the effect of carbon dioxide concentration on the rate of photosynthesis.
The results are shown in the table below.

concentration of carbon dioxide (%)	rate of photosynthesis (arbitrary units)
0.0	0
0.2	16
0.4	32
0.6	47
0.8	55
1.0	57
1.2	57
1.4	57
1.6	57
1.8	57

- (a) Use the grid to draw a graph of rate of photosynthesis against concentration of carbon dioxide.



(4)



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blank

(b) Use your graph to estimate the rate of photosynthesis when the concentration of carbon dioxide is 0.5%.

.....
(1)

(c) Use the graph to help you explain the effects of carbon dioxide concentration on the rate of photosynthesis.



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(6)

Q11

(Total 11 marks)

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12. Some hormones control sexual maturity and reproduction.

(a) Name the hormone that stimulates the production of sperm.

..... (1)

(b) State **one** secondary sexual characteristic that is the same in both females and males.

..... (1)

(c) The female sex hormones control the menstrual cycle.

(i) Describe the function of each of the following female hormones in this cycle.

Follicle stimulating hormone (FSH)

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

Luteinising hormone (LH)

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

Oestrogen

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

Progesterone

.....
.....
..... (4)

(ii) Which **two** of these sex hormones are released by the pituitary gland?

..... (1)

(Total 7 marks)

Q12



13. Enzymes are essential for the digestion of food.

(a) Name **one** organ that produces amylase, lipase and protease enzymes.

..... (1)

(b) (i) Name the enzyme that digests fats.

..... (1)

(ii) Name the products of digestion of fat.

..... and (1)

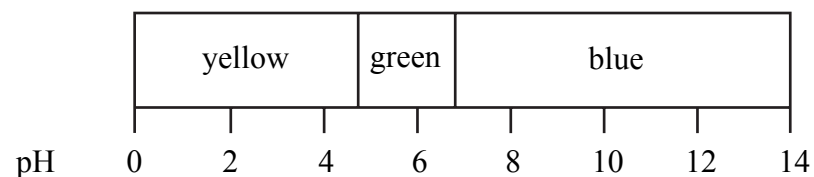
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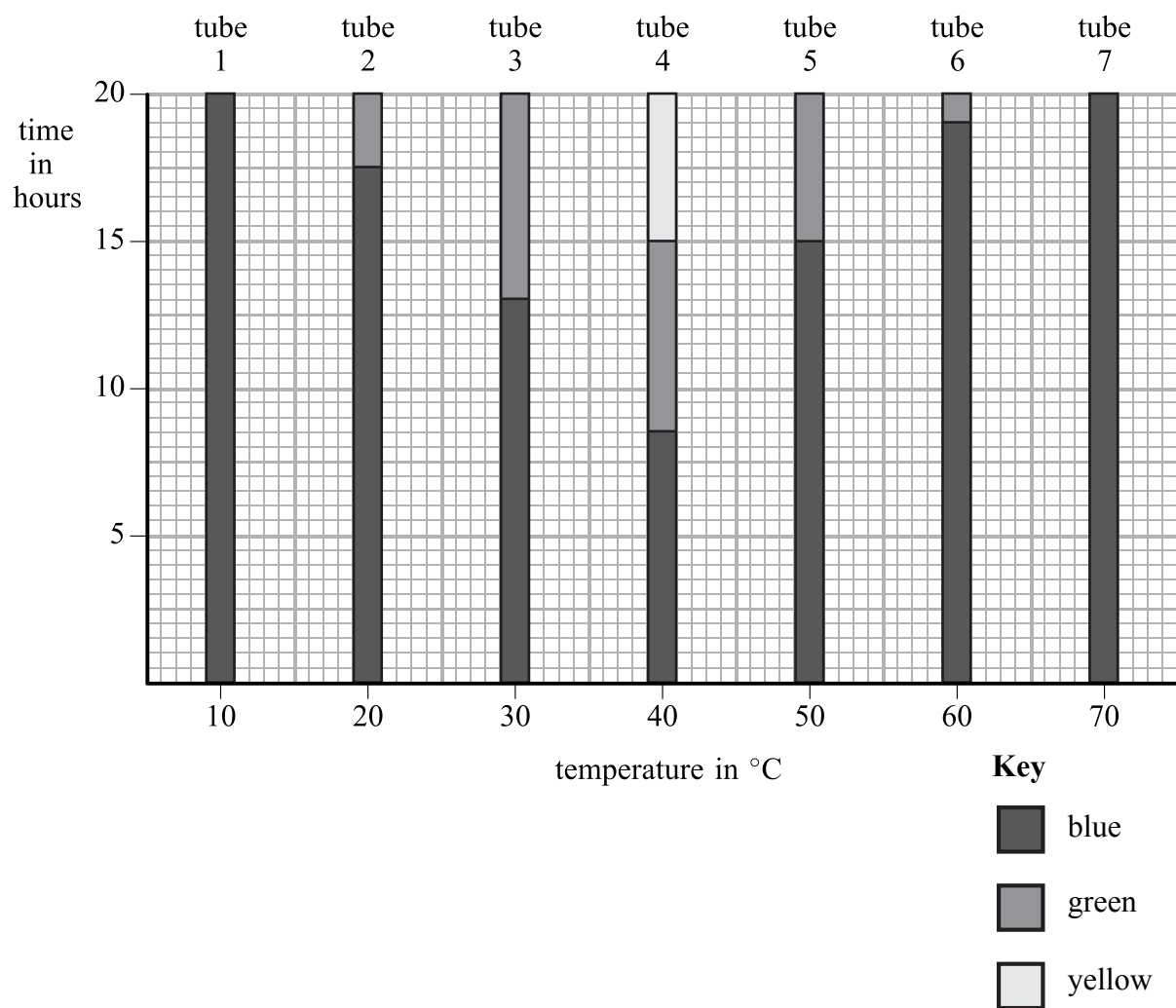
(c) Seven test tubes were set up, each containing the same quantities of olive oil, a digestive enzyme, bile salts and a pH indicator.

The seven tubes were kept at different temperatures.

The indicator changes colour as the pH changes. This is shown in the diagram below.



The colour of the indicator in each tube was recorded every hour and the results are shown in the bar chart.



(i) State the temperature at which the reaction happened most quickly.

..... (1)



Leave blank

(ii) Explain why the indicator changes from blue to yellow in one of the tubes.

.....
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(2)

(iii) Tubes 1 and 7 were then kept at 40 °C for an extra 20 hours.
Suggest, with reasons, the colour or colours you would expect to observe in each tube after the extra 20 hours.



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(6)

Q13

(Total 12 marks)

TOTAL FOR PAPER: 90 MARKS

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