Centre No.						Paper Reference							Surname	Initial(s)
Candidate No.										/	4	B	Signature	

Paper Reference(s)

5628/4B 5658/4B

Examiner's use only

Team Leader's use only

Edexcel GCSE

Science: Single Award B (1535)

Science: Double Award B (1536)

Biology B (1529)

(Modules 1 and 2)

Paper 4B

Higher Tier

Wednesday 6 June 2007 – Afternoon

Time: 30 minutes

Question Number	Leave Blank
1	
2	
3	
4	
5	
6	
Total	

Materials required for examination

Nil

Items included with question papers

Nil

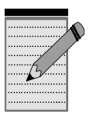
Instructions to Candidates

In the boxes above, write your centre number, candidate number, your surname, initial(s) and signature, and complete the paper reference.
Check that you have the correct question paper.
Answer ALL the questions. Write your answers in the spaces provided in this question paper.
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 individual questions and the parts of questions are shown in round brackets: e.g. **(2)**.
There are 6 questions in this question paper. The total mark for this paper is 30.
There are 8 pages in this question paper. Any blank pages are indicated.

Advice to Candidates



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

Printer's Log. No.
N25982A
W850/R1536/57570 11/8/6/2/2/48,900

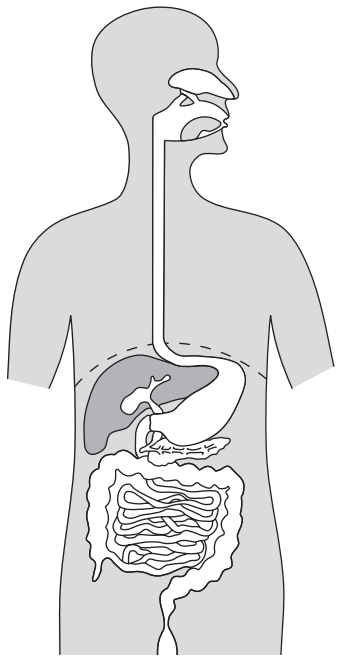
Turn over

edexcel
advancing learning, changing lives

Leave blank

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

1. The diagram shows the main parts of the digestive system.



(a) On the diagram, label and name **one** organ where enzymes that digest starch are added to food.

(2)

(b) Carole and Jon add this enzyme to some potato. Ten minutes later they test the mixture and find that there are simple sugars present.

Carole says ‘This proves that the enzyme digests starch to produce simple sugars’.

Jon says ‘I don’t think that it does, there may be another reason for the result’.

Give a reason why Jon’s statement is correct.

.....

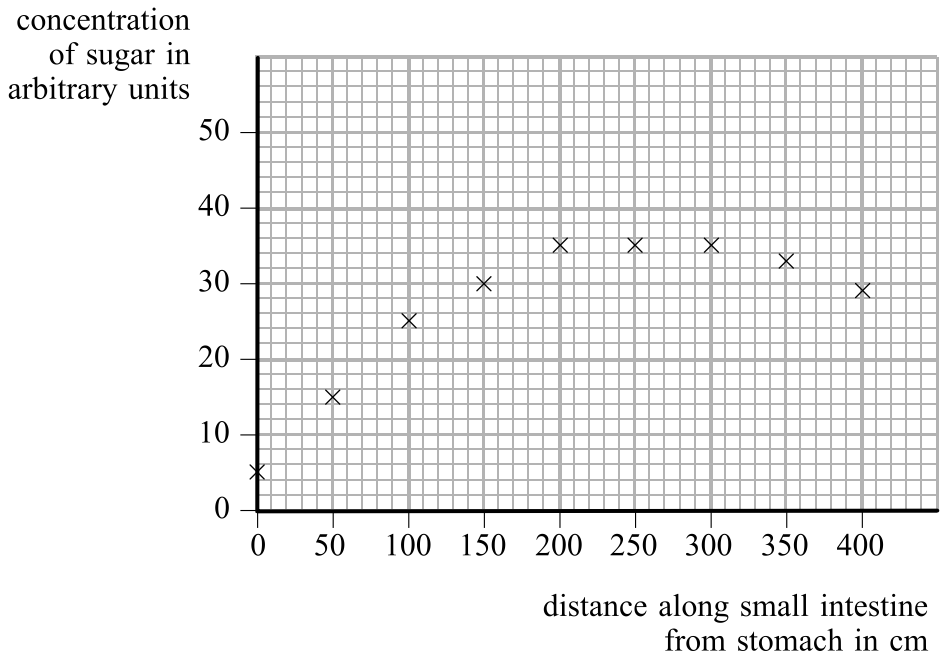
.....

(1)

Leave blank

(c) The concentration of sugar in the small intestine was measured four hours after eating a meal with a high content of starch.

The graph shows how the concentration of sugar in the small intestine changes with distance from the stomach.



(i) Complete the graph by drawing a suitable line.

(1)

(ii) Describe how the concentration of sugar changes from 0 to 300 cm from the stomach.

.....

.....

.....

(2)

(iii) Suggest why the concentration of sugar decreases after 300 cm from the stomach.

.....

.....

.....

(2) **Q1**

(Total 8 marks)

Leave blank

2. Wheat plants were grown in different soils with a pH range from 6.5 to 4.5.
Other conditions were kept the same.
The table shows the average heights of the wheat plants after one week.

pH	6.5	5.5	4.5
Average height of wheat (cm)	11.0	8.4	4.2

(a) Describe how the acidity of the soil affects the average height of the wheat plants.

.....

.....

.....

(2)

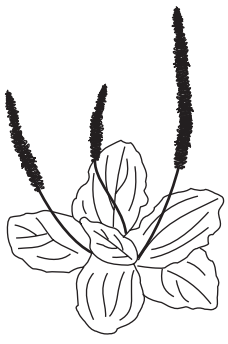
(b) Name one substance that combines with water vapour in the air to form acid rain.

.....

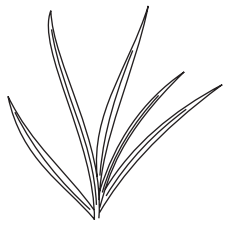
(1)

(c) The pictures show two plants found in a lawn.

plantain



grass



Acid rain affects plantains more than grass.
Using information in the pictures, suggest a reason for this.

.....

.....

(1)

Q2

(Total 4 marks)

Leave blank

3. The following is part of an article from a science magazine.

> When the completed human genome was published in 2003, Dr James Watson said:
>
> 'The completion of the Human Genome Project is a truly momentous occasion for every human.'

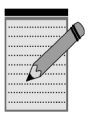
(a) What is the human genome?

.....

.....

(1)

(b) Suggest how the results of the Human Genome Project may benefit humans.



.....

.....

.....

.....

.....

.....

.....

.....

.....

(3) **Q3**

(Total 4 marks)

Leave blank

4. James and Julie are expecting a baby girl.

(a) Explain, in terms of chromosomes in the gametes, how a female zygote is produced at fertilisation.

.....

.....

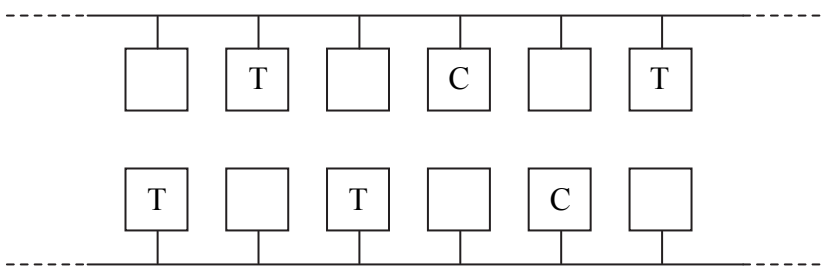
.....

.....

(2)

(b) Chromosomes contain DNA.

(i) Complete the diagram of DNA by writing in the letters to represent the missing bases.



(2)

(ii) Explain the effect that ionising radiation can have on DNA.

.....

.....

.....

.....

.....

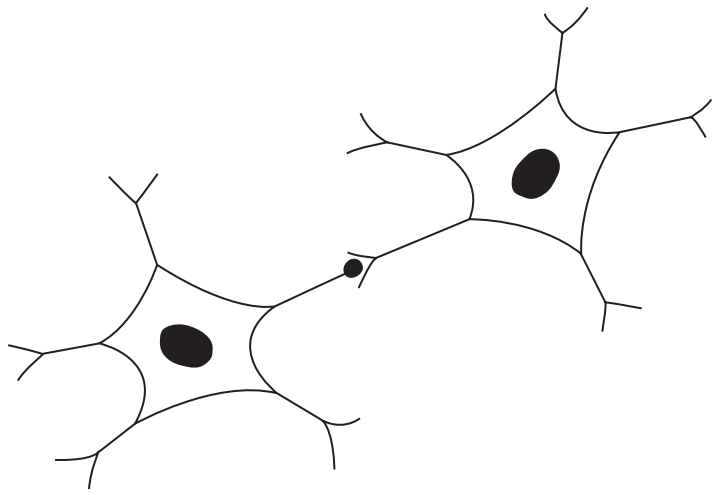
.....

(3) **Q4**

(Total 7 marks)

Leave blank

5. The diagram shows two neurones in the brain.



Chemical transmitters are released at synapses and bind to the next neurone. Heroin affects this process.

(a) Put a cross on the diagram to show where heroin acts.

(1)

(b) Explain why a doctor may prescribe heroin, even though the drug may have dangerous effects.

.....

.....

.....

.....

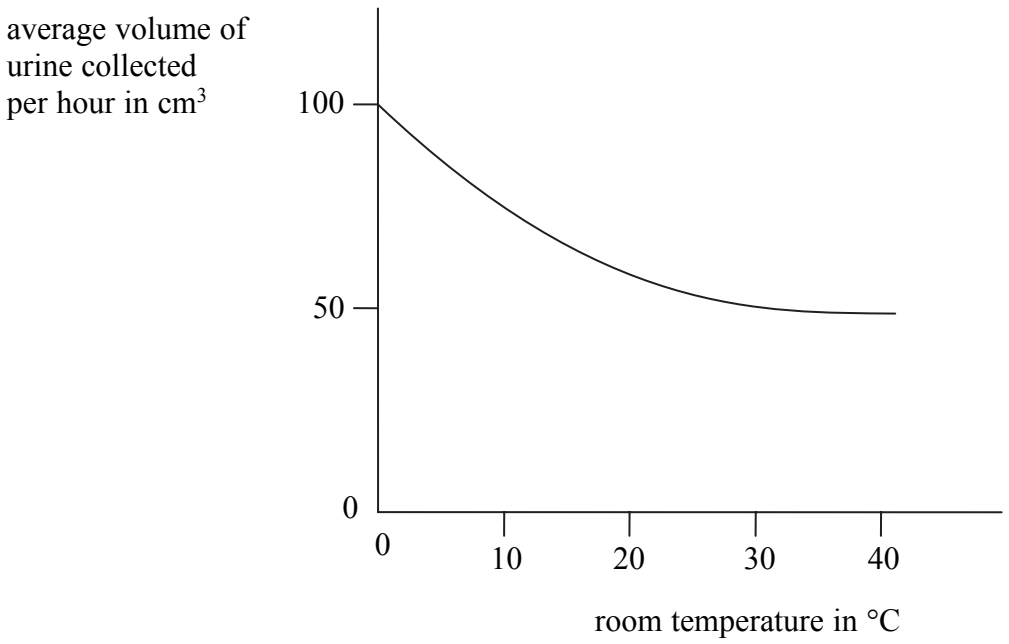
(2)

Q5

(Total 3 marks)

Leave blank

6. Ten volunteers stayed in a room for one day in order to investigate the effect of temperature on urine production.
Every hour each person drank 200 cm^3 of water.
Every two hours the room temperature was increased by 5 °C and the volume of urine produced by each person was measured.
The graph shows the average volumes of urine collected.



Explain how an increase in room temperature caused the variation in urine production. In your answer you should refer to the hormone that controls the volume of urine produced.

.....

.....

.....

.....

.....

.....

.....

.....

Q6

(Total 4 marks)

TOTAL FOR PAPER: 30 MARKS

END