Centre Number	Candidate Number	Name

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

BIOLOGY **0610/02**

Paper 2 Core

May/June 2006

1 hour 15 minutes

Candidates answer on the Question Paper.
No Additional Materials are required.

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use a pencil for any diagrams or graphs.
Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **all** questions.
At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.

For Examiner's Use	
1	
2	
3	
4	
5	
6	
7	
8	
Total	

This document consists of **14** printed pages and **2** blank pages.

Answer **all** the questions.

1 **(a)** Three characteristics of living organisms and four possible descriptions are shown below.

Draw a straight line to match each characteristic to its description.

characteristic	**description**
respiration	pumping air in and out of the lungs
nutrition	producing new individuals of the same species
reproduction	obtaining organic chemicals for the repair of tissues
	the release of energy from sugars

[3]

(b) State two **other** characteristics of living organisms.

1 .....

2 ..... [2]

[Total: 5]

2 Deforestation occurs in many parts of the world.

(a) State two reasons why deforestation is carried out.

1 .....

.....

2 .....

..... [2]

(b) (i) Explain two effects deforestation can have on the **carbon cycle**.

1 .....

.....

.....

2 .....

.....

..... [4]

(ii) Describe two effects deforestation can have on the **soil**.

1 .....

.....

2 .....

..... [2]

(iii) Forests are important and complex ecosystems. State **two** likely effects of deforestation on the forest ecosystem.

.....

.....

.....

..... [2]

[Total: 10]

3 Fig. 3.1 shows the male reproductive system and part of the urinary system.

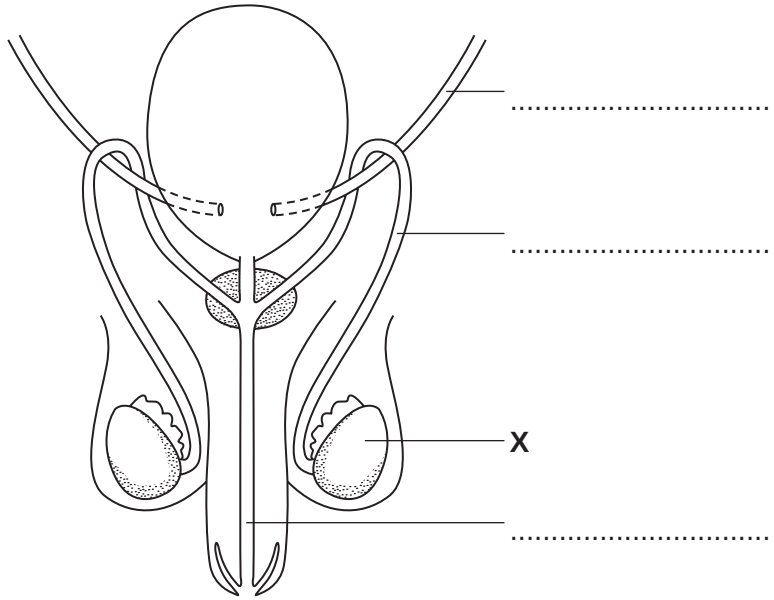

Fig. 3.1

(a) Label on Fig. 3.1 each of the following structures.

(i) a sperm duct [1]

(ii) a ureter [1]

(iii) the urethra [1]

(b) State two functions of the part labelled **X**.

1 .....

.....

2 .....

..... [2]

(c) Describe two methods of birth control that can be used by a male.

1 .....

.....

2 .....

..... [2]

(d) Explain how the sex of a baby is determined by the male parent's chromosomes.

.....

.....

.....

.....

.....

..... [3]

[Total: 10]

[Turn over

4 Two pea plants with red flowers were crossed and produced 177 seeds. 44 of these seeds grew into white flowered pea plants and 133 seeds grew into red flowered pea plants.

(a) (i) Which flower colour is controlled by the recessive allele?

..... [1]

(ii) Using the symbols **R** and **r** to represent the alleles, state the genotype of the parent pea plants.

..... [1]

(b) By means of a labelled genetic diagram explain the inheritance of flower colour in this cross.

[4]

(c) A red flowered pea plant, genetically identical to the original parent, was crossed with a white flowered plant. Predict the ratio of red flowered to white flowered plants expected from this cross.
You may use this space for any working.

..... : .....
red flowered plants white flowered plants

[1]

(d) Germination is the first stage of development of pea plants. List three environmental conditions needed for seeds to germinate.

1 .....

2 .....

3 ..... [3]

[Total: 10]

5 Fig. 5.1 shows the water cycle.

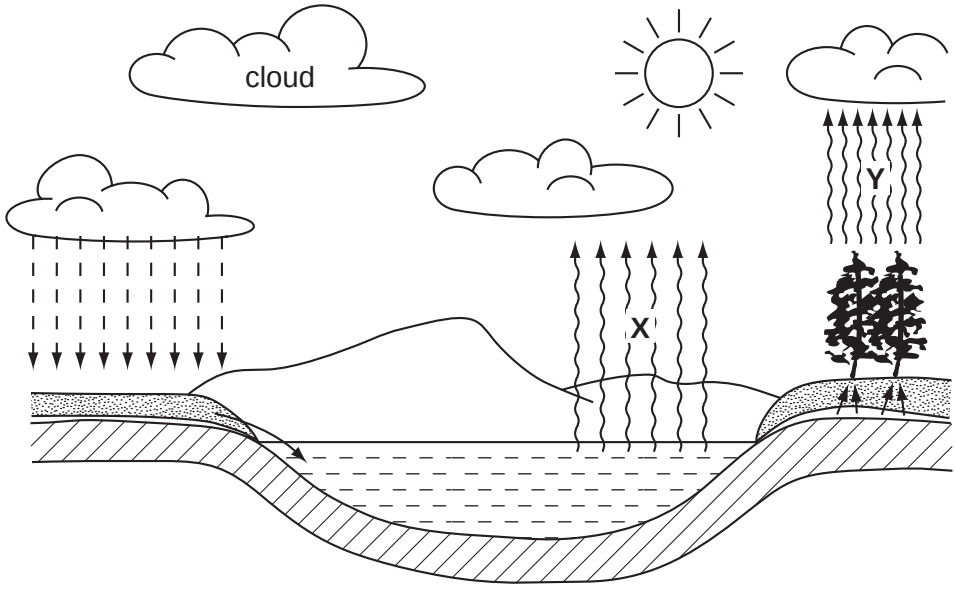

Fig. 5.1

(a) (i) For water to circulate in this cycle a supply of energy is needed.

What is the source of this energy?

..... [1]

(ii) State which process is represented by **X**.

..... [1]

(iii) State which process is represented by **Y**.

..... [1]

(iv) Suggest what causes cloud formation.

.....

.....

..... [2]

(b) Water is needed by plants. State two ways in which plants use water.

1 .....

.....

2 .....

..... [2]

(c) **(i)** Explain how water is absorbed by the root hairs of a plant.

.....

.....

.....

..... [3]

(ii) Cereal plants were growing in a field. The field was then flooded with sea water.

Suggest why the sea water causes the plants to die.

.....

.....

.....

..... [3]

[Total: 13]

6 The table shows the amounts of four nutrients required by four people for a balanced diet.

person	protein / g	iron / mg	calcium / mg	vitamin C / mg
14 year-old boy	66	11	700	25
14 year-old girl	55	13	700	25
30 year-old woman	53	12	500	30
30 year-old pregnant woman	60	14	1200	60

(a) (i) Explain why there is a difference in the amount of protein required by the 14 year-old boy and the 30 year-old woman.

.....

.....

.....

..... [3]

(ii) Explain why there is a difference in the amount of iron required by the 14 year-old girl and the 14 year-old boy.

.....

.....

..... [2]

(iii) Explain why there is a difference in the amount of calcium required by the two 30 year-old women.

.....

.....

..... [2]

(b) State the role of vitamin C in the human body.

.....

..... [1]

[Total: 8]

7 **(a)** Carbon dioxide is a product of aerobic respiration. Describe how you could identify carbon dioxide in expired air.

.....

.....

..... [2]

(b) Some organisms respire aerobically and anaerobically.

(i) Write a word equation for **anaerobic** respiration in human muscle.

..... [2]

(ii) Describe how anaerobic respiration of yeast helps in the preparation of bread dough.

.....

.....

.....

..... [3]

(iii) Suggest what happens to the yeast and the products of anaerobic respiration when the dough is baked at a high temperature.

.....

.....

..... [2]

(c) State two differences between aerobic and anaerobic respiration.

Do **not** include the chemicals produced by respiration.

1 .....

.....

2 .....

..... [2]

[Total: 11]

8 Fig. 8.1 shows a diagram of part of the digestive system, associated organs and blood vessels.

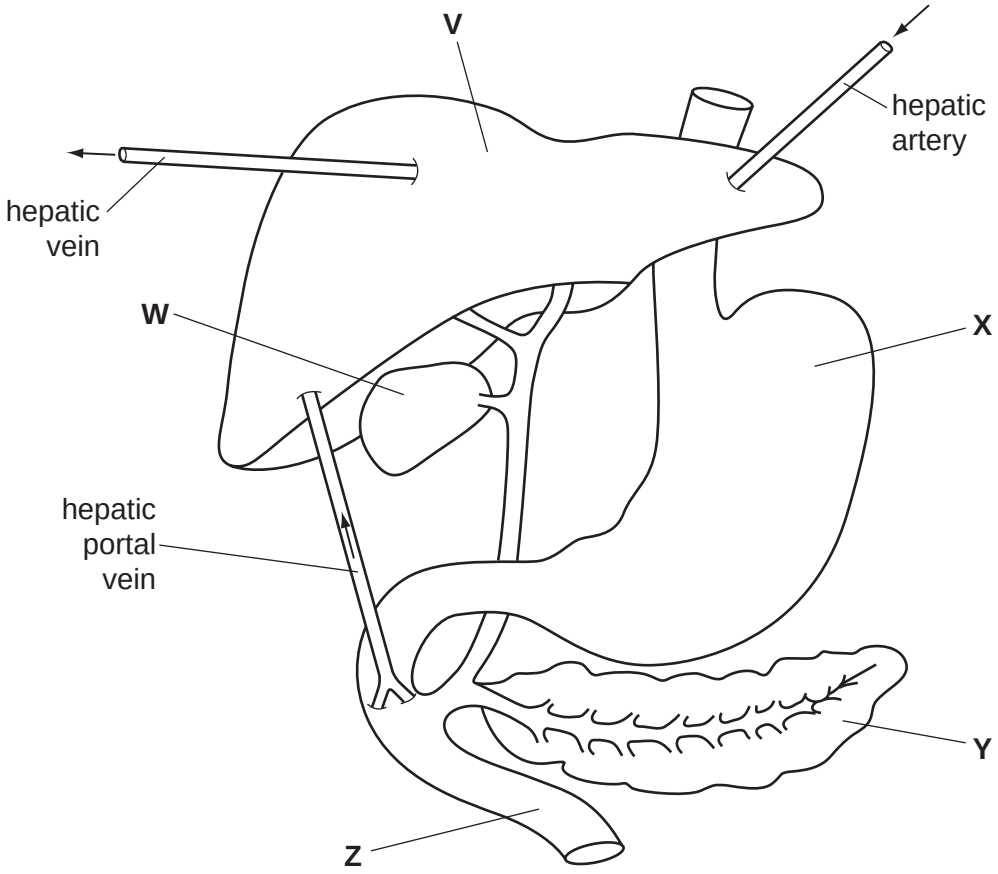

Fig. 8.1

(a) Complete Table 8.1 to identify the named structures.

Table 8.1

name of structure	letter label
duodenum	
gall bladder	
liver	
pancreas	
stomach	

[5]

(b) **(i)** Name the liquid that is stored in the gall bladder.

..... [1]

(ii) Name a hormone that affects the storage of glycogen in the liver.

..... [1]

(c) Fig. 8.2 shows the rate of digestion of protein by two different enzymes, **A** and **B**, over a range of pH.

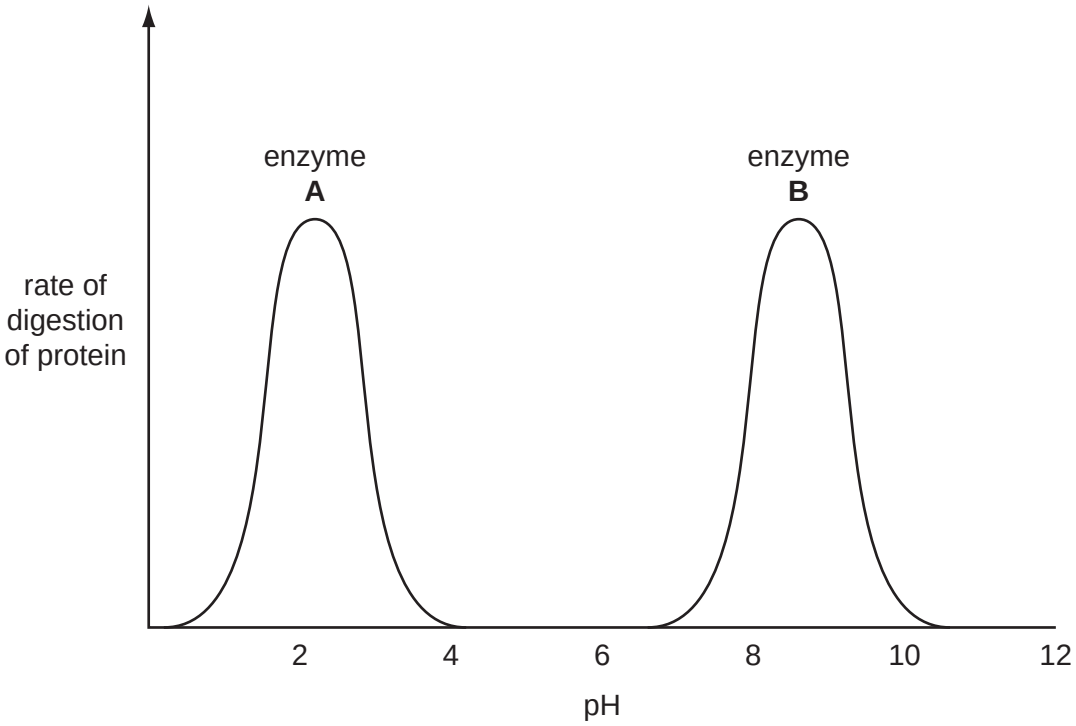

Fig. 8.2

(i) Name the structure, shown in Fig. 8.1, in which enzyme **A** will be most active.

..... [1]

(ii) Name the structure, shown in Fig. 8.1, in which enzyme **B** will be most active.

..... [1]

(d) (i) Name the blood vessel, shown in Fig. 8.1, that would contain blood with the highest oxygen concentration.

..... [1]

(ii) Which part of the blood carries oxygen?

..... [1]

(iii) Name the blood vessel, shown in Fig. 8.1, that would contain blood with the highest urea concentration.

..... [1]

(iv) Which part of the blood carries urea?

..... [1]

[Total: 13]

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