



**SCHOLARSHIP EXAMINATION**

**BIOLOGY**

**2013**

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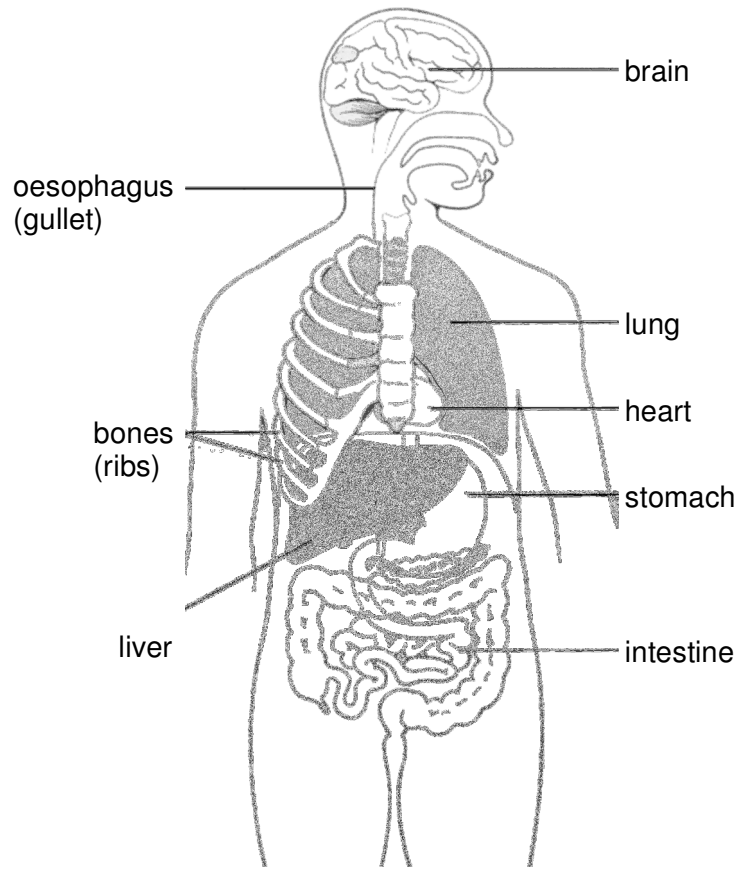
*Time: 30 minutes*

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**Name:** .....

**School:** .....

1. The diagram shows some of the organs of the human body.



(a) Give the names of **two** labelled parts where food is digested.

..... and .....

1 mark

(b) Why do we need to chew our food and mix it with saliva?

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

2 marks

(c) (i) Draw **one** line from each bad habit to the organ it harms.

**bad habit**

**organ**

drinking too much alcohol

liver

**not** eating enough fibre

lung

smoking cigarettes

ribs

intestine

3 marks

(ii) Which organ in the list below can be harmed if we eat too much fat?  
Tick the correct box.

brain

heart

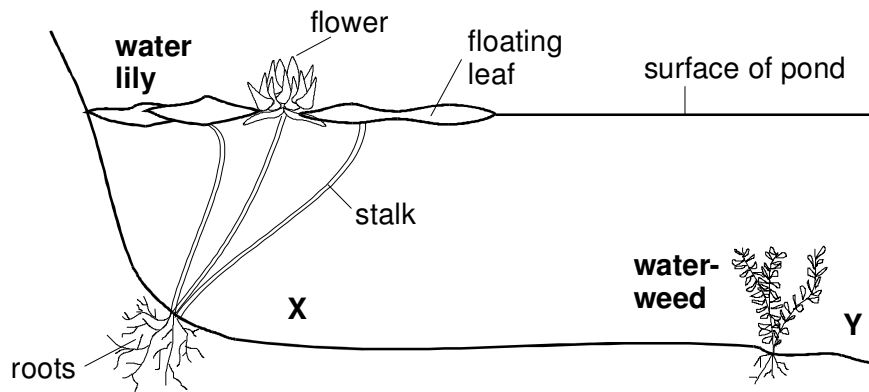
lung

ribs

1 mark

Maximum 7 marks

2. The drawing shows a water lily and some waterweed growing in a pond.



(a) Waterweed grows well at **Y** but not at **X**. Why is this?

Tick the correct box.

There is not enough food at **X**.

There is not enough light at **X**.

There is not enough oxygen at **X**.

There is not enough water at **X**.

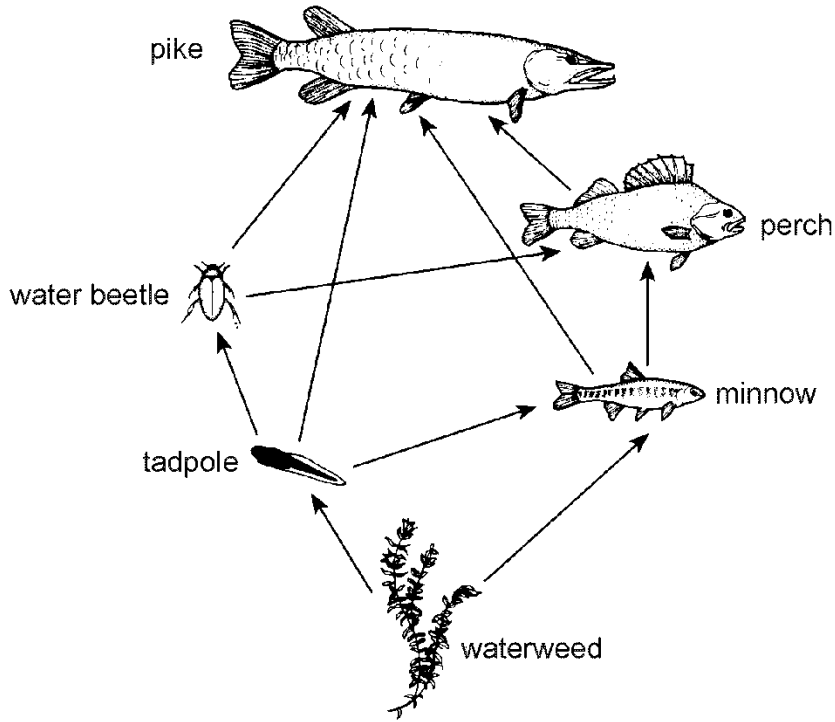
1 mark

(b) Which **named** part of the water lily produces seeds?

.....

1 mark

- (c) The drawing shows part of a food web in a pond. Use the information in the drawing to answer the questions.



- (i) Write **three** names from the food web to make a food chain which ends with pike.

..... → ..... → .....

**pike**

1 mark

- (ii) Write the name of **one** predator in the food web and the name of **one** of its prey.

Predator: .....

Prey: .....

2 marks

- (d) Fish have gills and fins. How do these help the fish to live in water?

Gills are for .....

.....

Fins are for .....

.....

2 marks

Maximum 7 marks

3. The drawing shows part of a blackberry plant.



(a) Photosynthesis takes place in the leaves of the blackberry plant. Complete the word equation for photosynthesis.

water + carbon dioxide → ..... + oxygen

1 mark

(b) Jonathan studied a blackberry plant growing in a shady place and a blackberry plant growing in a sunny place.

(i) Jonathan found that the plant in the shady place had larger leaves. Why is it an advantage for plants in the shade to have leaves with a large surface area?

.....  
.....

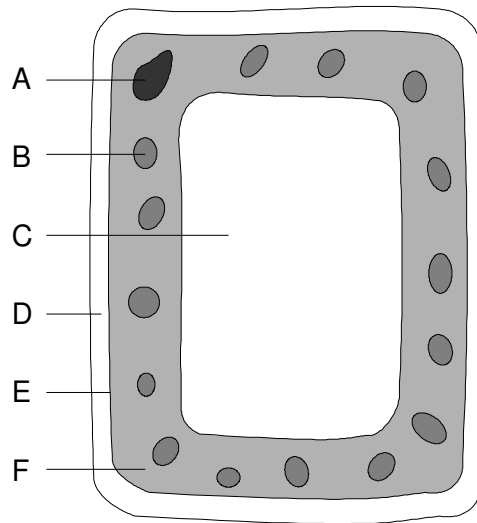
1 mark

(ii) Both blackberry plants had green leaves. What part of the leaf cells makes the leaf green?

.....

1 mark

(c) The diagram below shows a cell from a leaf of a blackberry plant.



The names of four parts of the cell are listed in the table below.

(i) Match the name of each part with a letter from the diagram. Write your answers in the table.

part	letter of part
cell wall	
cytoplasm	
nucleus	
vacuole	

4 marks

(ii) Which **two** of the labelled parts are also present in an animal cell? Give the correct letters from the diagram.

..... and .....

2 marks

Maximum 9 marks

4. The table shows the recommended daily intake of energy and some of the nutrients needed by different groups of people.

group of people	energy, in kJ	nutrients				
		protein, in g	carbohydrate, in g	fat, in g	minerals, in g	
					calcium	iron
male 15–18	11510	55.2	360	109	1000	11.3
female 15–18	8830	45.0	276	84	800	14.8
male 19–50	10600	55.5	331	100	700	8.7
female 19–50	8100	45.0	253	77	700	14.8
pregnant female	8900	81.0	278	84	700	14.8

- (a) (i) Explain why two 16 year-old males of the same weight might need different amounts of energy.

.....  
 .....

1 mark

- (ii) Which **two** types of nutrient provide most of the energy in our diet?

1. ....  
 2. ....

2 marks

- (b) (i) Calculate the difference in the recommended daily intake of calcium for a 15 year-old male and a 30 year-old male.

..... mg

1 mark

- (ii) Calcium is needed for healthy bones. Explain the difference in the amount of calcium needed each day by a 15 year-old male and a 30 year-old male.

.....  
 .....

1 mark



- (c) Look at the table. Explain the difference in the amount of protein needed by a 25 year-old pregnant female and a 25 year-old female who is **not** pregnant.

.....  
.....

1 mark

- (d) Iron is needed to make blood.  
Explain why a 15 year-old female might need more iron than a 15 year-old male.

.....  
.....

1 mark

Maximum 7 marks

5. A large chicken farm has been asked by a supermarket to find out whether or not chickens will grow better if they are kept inside or outside.



You have to plan an experiment which would prove whether the chickens will grow more quickly if kept in a barn, or whether they will grow more quickly if kept outside in a field.

In your plan give:

- the one factor you will change as you carry out your investigation;
- the factor you will measure;
- one of the factors you should control to ensure a fair test;
- the time scale for the investigation.

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*(maximum 6 marks)*