The Haberdashers' Aske's Boys' School
Elstree, Herts

13+ Entrance Examination 2015

BIOLOGY

Please follow these instructions

- The Science paper is divided into three sections (Biology, Chemistry and Physics). The time for the Science paper is 1 hour. You should spend no more than 20 minutes on each section.
- Answer the questions in the spaces provided. Long answers are not expected.
- You may use your calculator in any of the numerical questions.
- Rough work should be done on the paper but do not write in the margins.
- Write your name and school in the box below.

Name	
School	
Exam number	

For the examiner's use only

Question	1	2	3	4	5	Total
Max	4	9	3	8	9	33
Mark						

Leave blank

1. The photograph below shows a parasitic plant from New Zealand. It has permanently yellow leaves.



(a) What is the name of the process in plants by which light energy is captured in a chemical form?

. . . . . (1 mark)

(b) What chemical is present in the most plants green parts but not in the Yellow leaves of the parasitic plant . . . . . (1 mark)

(c) What is the name of the useful substance, created by the process, that contains the trapped energy?

. . . . . (1mark)

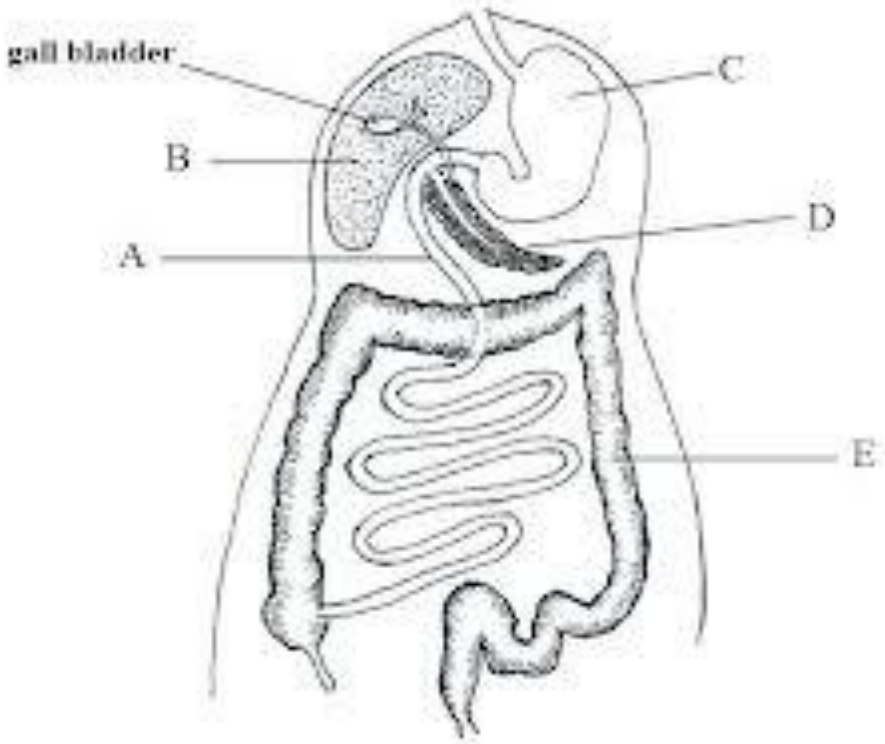
(d) What waste substance (gas) is produced by this process?

. . . . . (1 mark)

4 marks

Leave blank

2. The diagram below shows the digestive system



Write the name for the each of the organs labelled A to E

A . . . . . (1 mark)

B . . . . . (1 mark)

C . . . . . (1 mark)

D . . . . . (1 mark)

E . . . . . (1 mark)

f. Name one organ that secretes enzymes? . . . . . (1 mark)

g. Which organ is the site of food absorption into the blood? . . . . (1 mark)

h. Which organ is the site at which water is reabsorbed back into the blood?

.. . .(1 mark)

f. Which organ has a low pH inside? . . . . (1 mark)

9 marks

Leave blank

3..Fill in the gaps in the passage below, using some of the words provided in *italics*.

(each word may be used once, more than once or not at all)

The process by which food enters the digestive system is called . . . . …… . . . . . .

The food is moved down the digestive system by a process called peristalsis. The

food is broken down into smaller soluble molecules in a process called . . . ……. . . .

The small soluble molecules enter the bloodstream in the small intestine, this

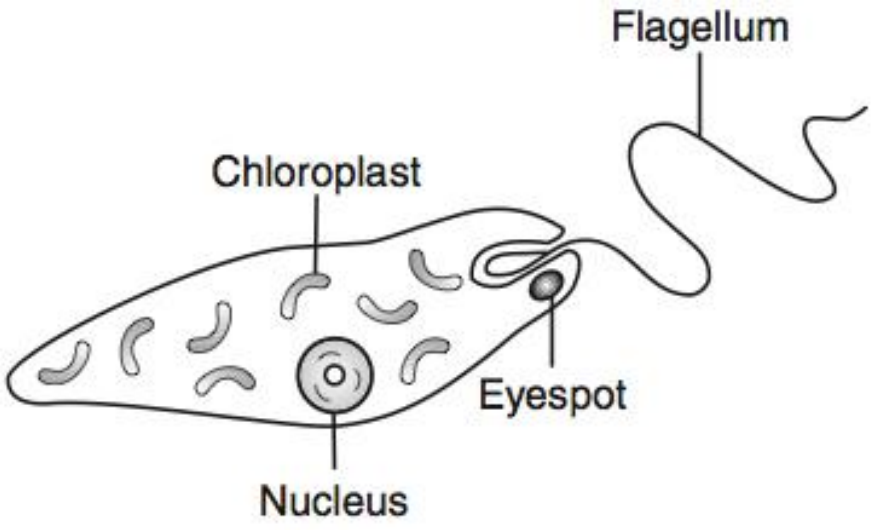
process is called . . . . . ……... . . . . .

egestion, photosynthesis, absorption, ingestion,

erosion, soluble, uptake, digestion

3 marks

4. The diagram below is of a single celled organism called *Euglena*. It can only be seen by using a microscope.



a) What is the name of the structure that surrounds a cell and controls what can enter and leave the cell?

……. . . . . (1 mark)

Leave blank

b) What is the name of the structure that contains the genetic information inside the cell?

. . . . . (1 mark)

c) What chemical would move into the cell to enable it to release energy from its food? . . . . . (1 mark)

d) Which of the labelled structures in found in both plant and animal cells?

. . . . . (1 mark)

e) Which of the labelled structures is found only in plant cells

. . . . . (1 mark)

f) Suggest the role of the chloroplasts in *Euglena* . . . . . (1 mark)

g) Suggest the function of the flagellum

. . . . . (1 mark)

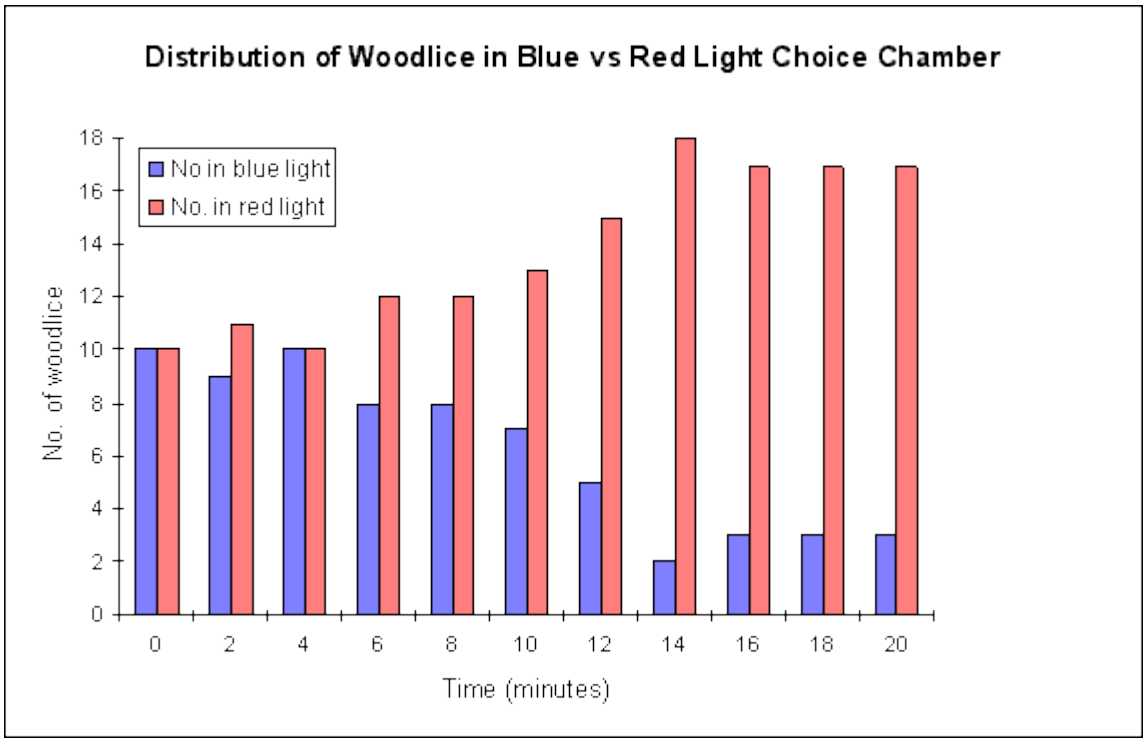
h) Suggest the function of the eyespot

. . . . . (1 mark)

8 marks

Leave blank

5. In an experiment 20 woodlice (a small animal) were placed in the centre of a piece of apparatus called a Choice Chamber. One side of the chamber was illuminated with red light and the other with blue light. In a choice chamber the woodlice are free to move to either the red or blue side. Every two minutes then number of woodlice in both the red and blue light were counted.



a) At what times are there equal numbers of woodlice in both the red and blue light?

……... . . . . (1 mark)

b) Suggest three variables that should be kept the same during the experiment?

……

……

……

(3 marks)

c) .....

Name the two characteristics of living things that the woodlice are demonstrating in this experiment

. . . . . .……... .

…….... (2 marks)

Leave blank

d) At what time are the minimum number of woodlice in the blue light?

. . . . . ….. . . . . ……(1 mark)

e) The person who is doing the experiment wishes to repeat the experiment 3 times? What is the advantage of doing three repeats?

. . . . . ……. . . . .

. . . . . (1 mark)

f) What is the shortest time that the person carrying out the experiment should record for in order to get meaningful results

. . . . . (1 mark)

Maximum 33 marks