Centre Number	Candidate Number

Candidate Name _____

International General Certificate of Secondary Education
UNIVERSITY OF CAMBRIDGE LOCAL EXAMINATIONS SYNDICATE

BIOLOGY 0610/6

PAPER 6 Alternative to Practical

Tuesday **2 NOVEMBER 1999** Morning 1 hour

Candidates answer on the question paper.
No additional materials are required.

TIME 1 hour

INSTRUCTIONS TO CANDIDATES

Write your name, Centre number and candidate number in the spaces at the top of this page.
Answer **all** questions.
Write your answers in the spaces provided on the question paper.
Use a sharp pencil for your drawings. Coloured pencils or crayons should not be used.

INFORMATION FOR CANDIDATES

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	
TOTAL	

This question paper consists of 10 printed pages and 2 blank pages.

[Turn over

BLANK PAGE

Do not write on this page.

1 **(a)** **(i)** Describe how you would carry out a test to show the presence of fat in a biscuit. What observation would indicate the presence of fat?

Test .....

.....

Observation .....

.....[3]

(ii) Describe how you would use this test to compare the fat content of two different types of biscuit.

.....

.....

.....[2]

(b) Complete the equation below to summarise the process of fat digestion.

fat + water $\xrightarrow[\text{(enzyme)}]{\text{.....}}$ ..... + ... [3]

[Total : 8]

2 Fig. 1 shows an experiment to investigate the rate of cooling of water in two glass containers, **A** and **B**.

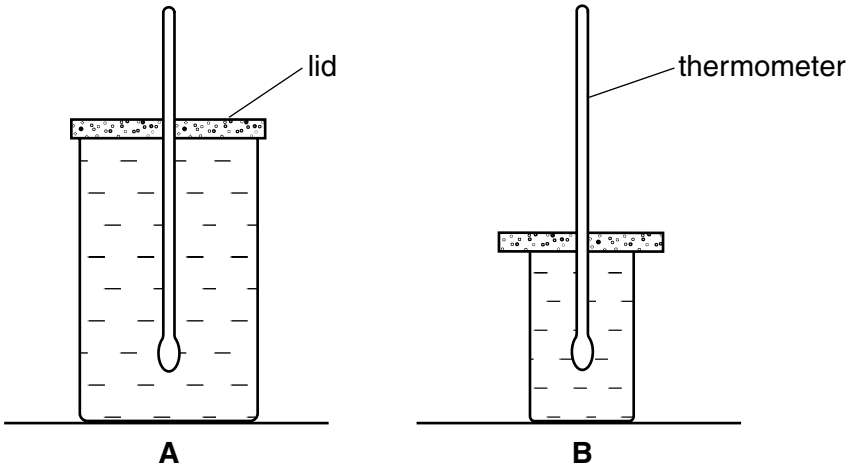


Fig. 1

Table 1 shows the surface areas and volumes of containers **A** and **B**.

Table 1

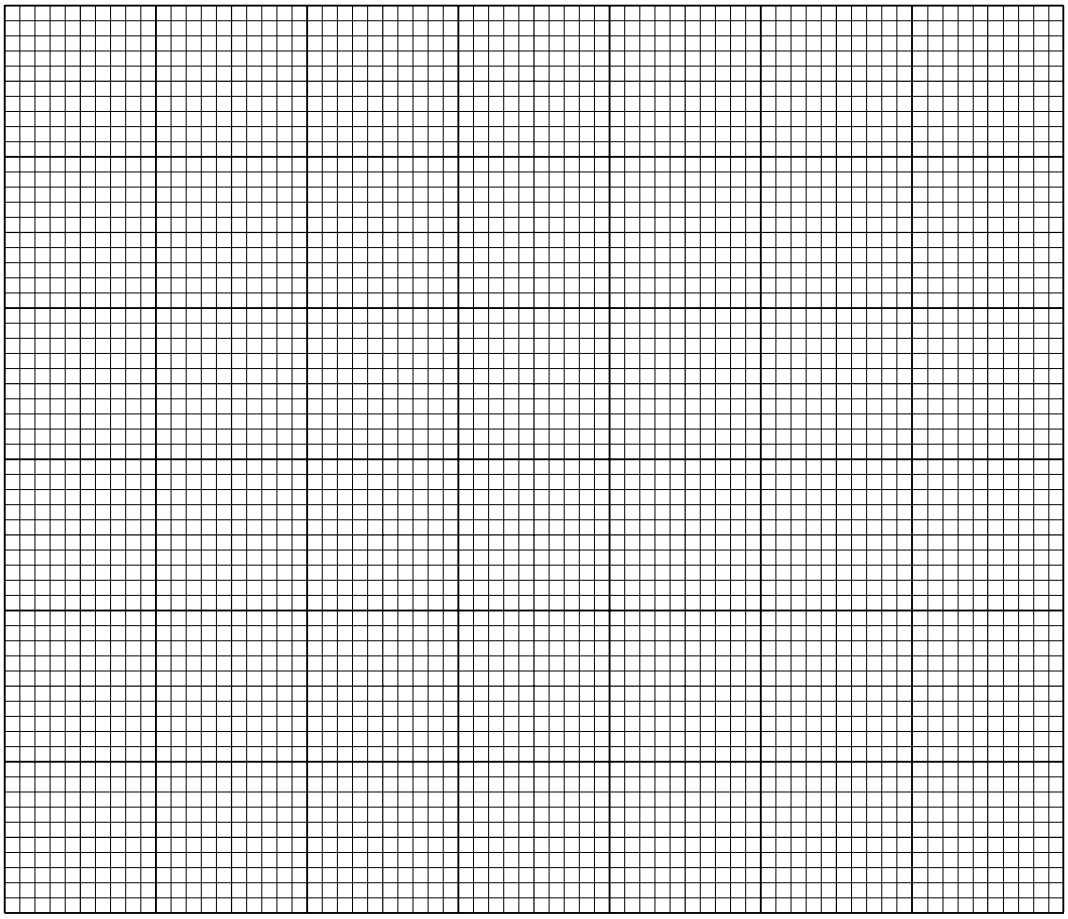
	container **A**	container **B**
surface area/ cm^2	300	102
volume/cm^3	500	100

The results of this investigation are shown in Table 2.

Table 2

time/min	temperature/°C	
	container **A**	container **B**
0	66.0	66.0
1	65.5	64.5
3	64.5	62.0
5	63.5	60.0
7	62.5	58.0
8	62.0	57.0
9	60.0	54.0
10	59.5	53.0

(a) Plot the results in Table 2 as two curves on one set of axes. The two curves should be distinct and clearly labelled.



[6]

(b) (i) The surface area to volume ratio for container **A** is 0.6 : 1.

Calculate the ratio for container **B**. Show your working.

Ratio .....[2]

(ii) Using the graph and the information in **(b) (i)**, describe the relationship between the rate of cooling and the surface area to volume ratio.

.....

.....

.....[2]

(c) The fall in temperature between 8 and 9 minutes is faster than between any other pair of readings. What might have happened to cause this more rapid fall in temperature?

.....

.....[1]

(d) Explain how, at the north pole, a large polar bear and her small cub are able to maintain the same internal temperatures but the temperatures of the large and small containers do not remain the same.

.....

.....[2]

[Total : 13]

3 Fig. 2 is a photograph of a dry broad bean seed, **A**, and a broad bean seed that has been soaked in water, **B**.

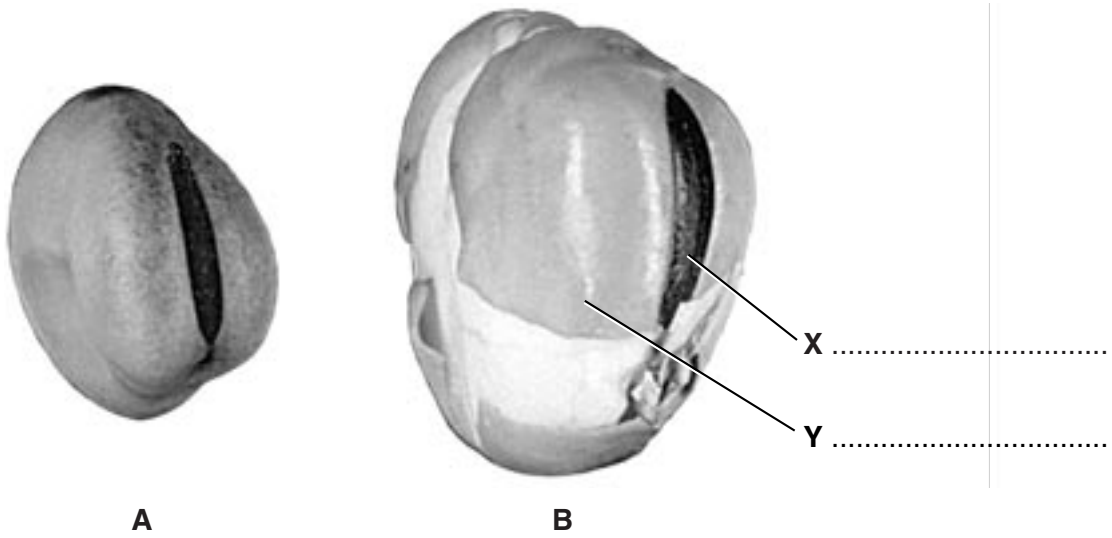


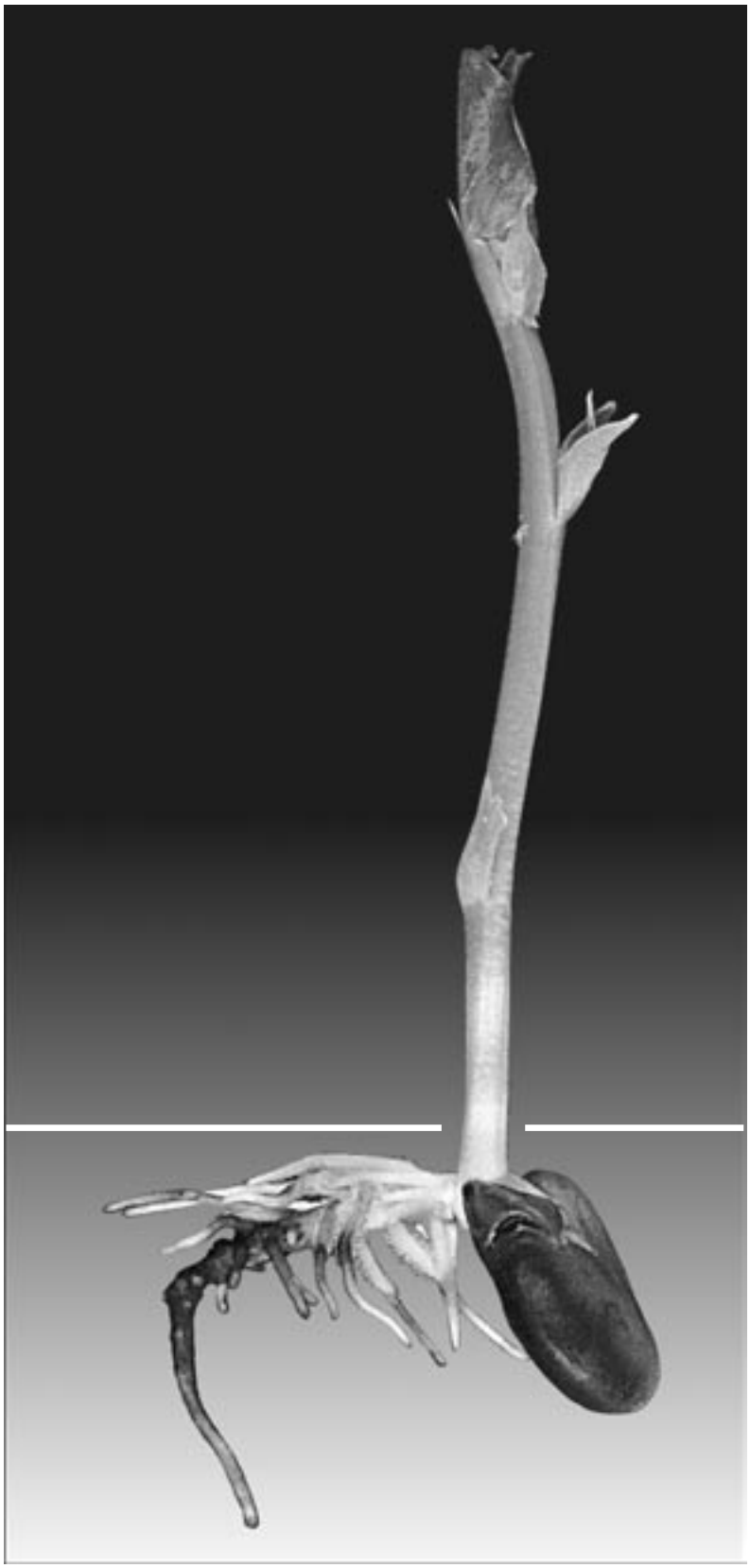
Fig. 2

(a) Name **X** and **Y** on Fig. 2. [2]

Fig. 3 opposite, is a photograph of a broad bean seedling.

(b) (i) Make a large labelled drawing of Fig. 3 in the space below.

[7]



broad bean seedling

Fig. 3

[Turn over

(ii) Make a simple drawing to show the appearance of the seedling between the stages shown in Fig. 2B and Fig. 3. Labels are **not** required.

[1]

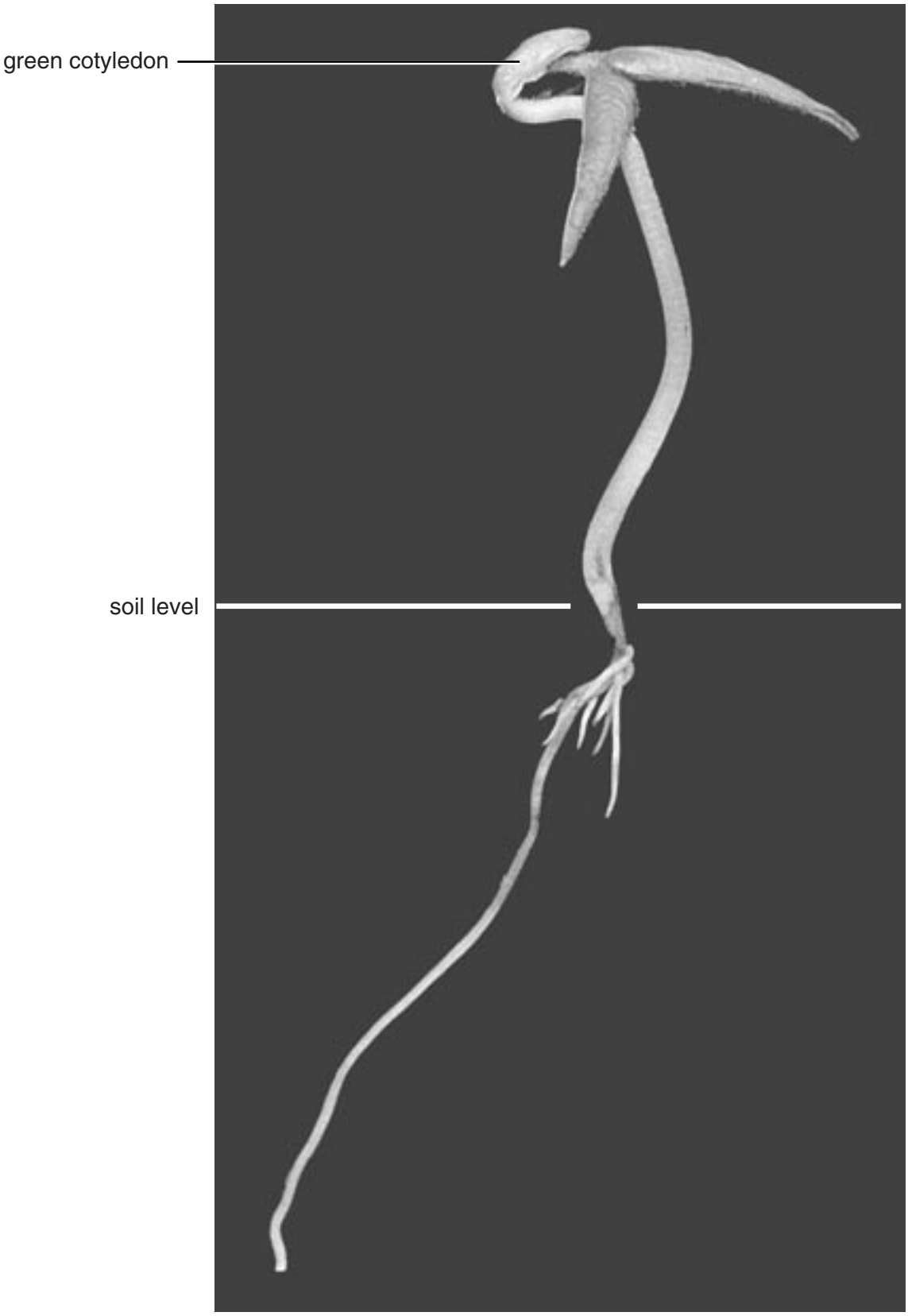
Fig. 4 opposite, shows a mung bean at approximately the same age as the broad bean in Fig. 3.

(c) Complete the table below to show **three** visible differences, other than size, which you can see between the two bean seedlings.

broad bean	mung bean
1.	
2.	
3.	

[3]

[Total : 13]



mung bean seedling

Fig. 4

4 Fig. 5 shows a food web for a freshwater pond.

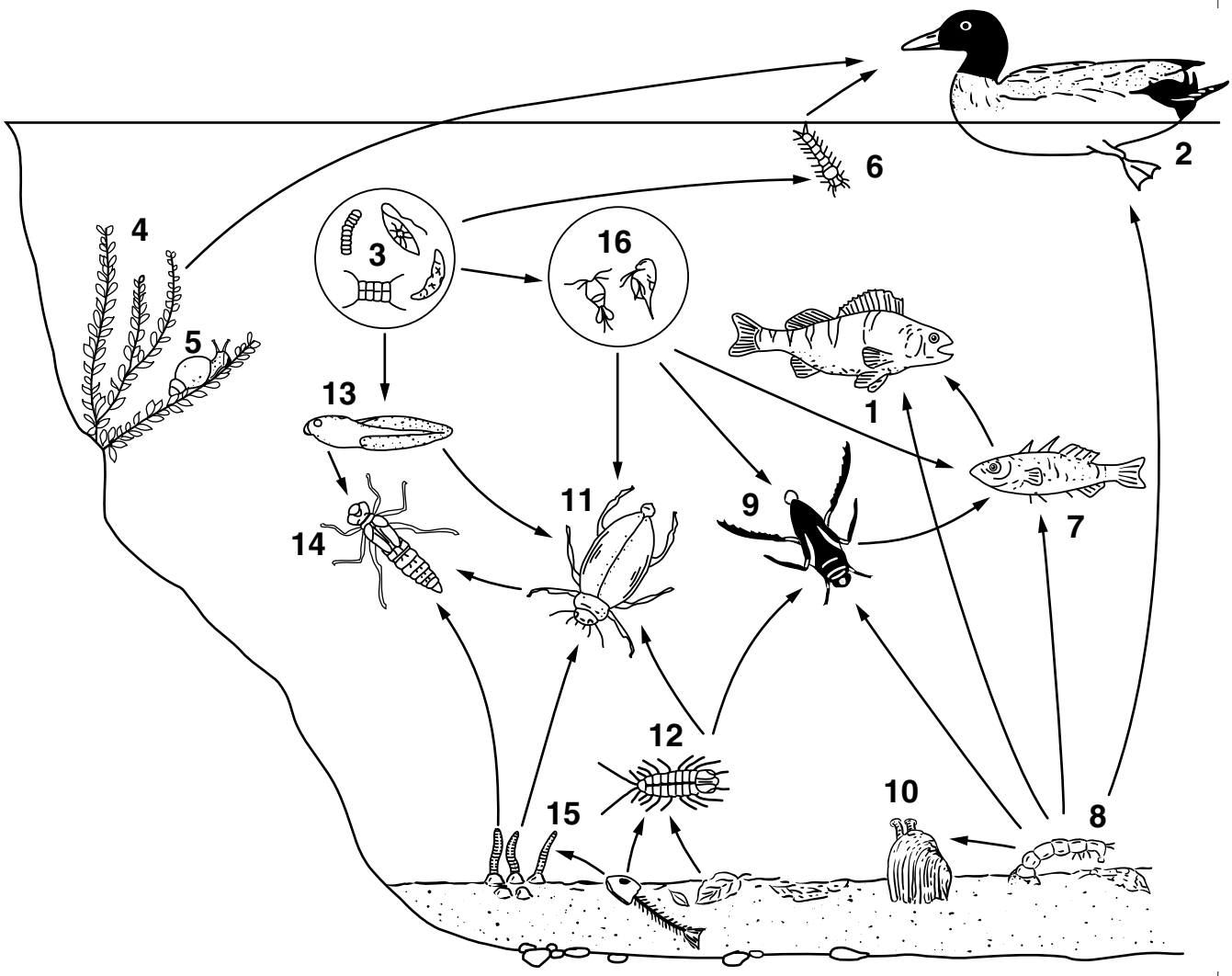


Fig. 5

(organisms 3 and 16 are greatly enlarged)

(a) Two trophic levels are listed below. For each level, state **two** examples from Fig. 5. Identify them by their **numbers**.

(i) *Primary consumers (herbivores)* ..... and .....

(ii) *Secondary consumers (carnivores)* ..... and .....
[2]

(b) Using only the numbers in Fig. 5, construct a simple food chain with **five** stages.

.....[2]

(c) Suggest how you could collect large numbers of the microscopic organisms numbered **3** in Fig. 5.

.....

.....[2]

[Total : 6]

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