



Write your name here

Surname

Other names

# Scholarship Examination.

**Subject: Biology**

**Paper: 1B**

**Time: 45 minutes**

**You must have:**

Calculator  
Ruler

**Total Marks**

/45

## Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name.
- Answer **all** questions.
- Answer the questions in the spaces provided
  - *There may be more space than you need.*
- Show all the steps in any calculations and state the units.

## Information

- The total mark for this paper is 45
- Each multiple choice question is a mark
- The marks for **each** question are shown in brackets
  - *Use this as a guide as to how much time to spend on each question.*

## Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Write your answers neatly and in good English (languages please change this).
- Try to answer every question.
- Check your answers if you have time at the end.

Answer all the questions.

**Q1.**

Living organisms share some basic characteristics.

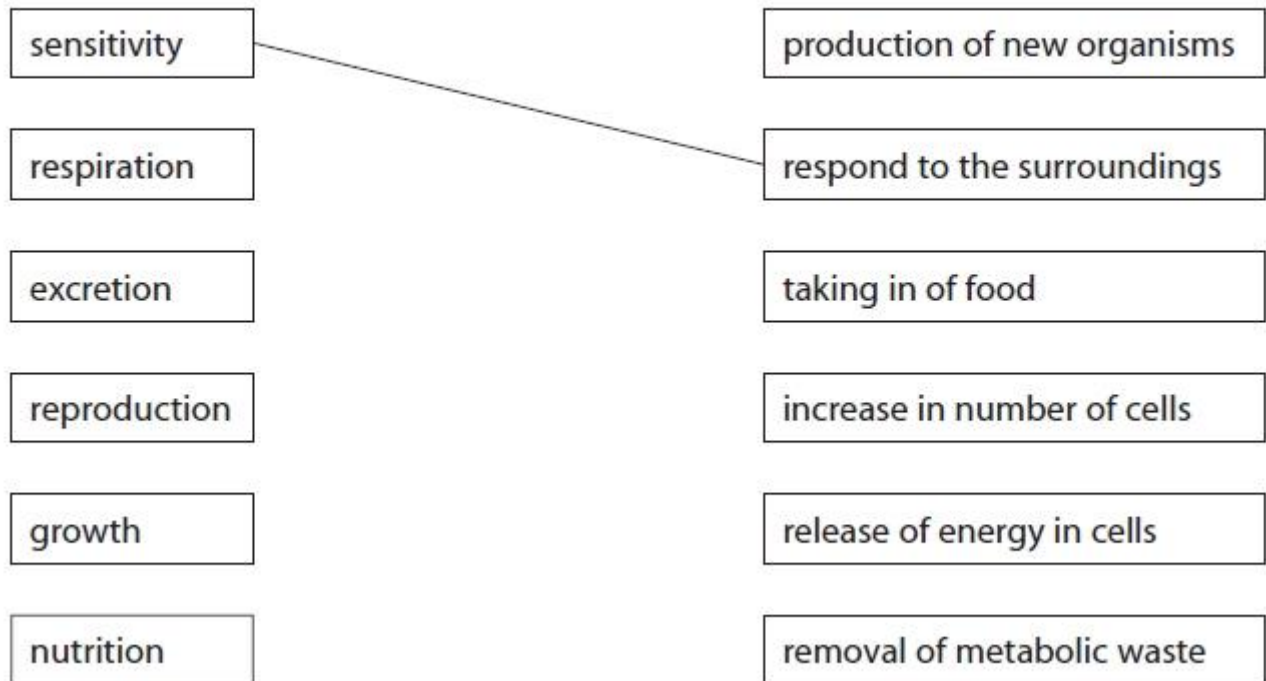
Draw a straight line from each characteristic to its correct description.

The first has been done for you.

(4)

**Characteristic**

**Description**



(Total for question = 4 marks)

**Q2.**

(a) The table shows four different groups of organisms.

Complete the table to give an example for each group.

(4)

Group	Example
animals	
fungi	
bacteria	
protocists	

(b) Different groups have different features.

Complete the table below to show if the feature is present in all, some or none of each group.

Some of the table has been completed for you.

(3)

Group	Are multicellular	Cells have nucleus	Cells contain chloroplasts	Cells have cell walls
fungi		all		all
bacteria			some	all
protocists	none		some	

(c) (i) Give one way in which the structure of a virus differs from a bacterium.

(1)

.....

.....

.....

(ii) Bacteria and viruses can act as pathogens. Give an example of a disease caused by a virus.

(1)

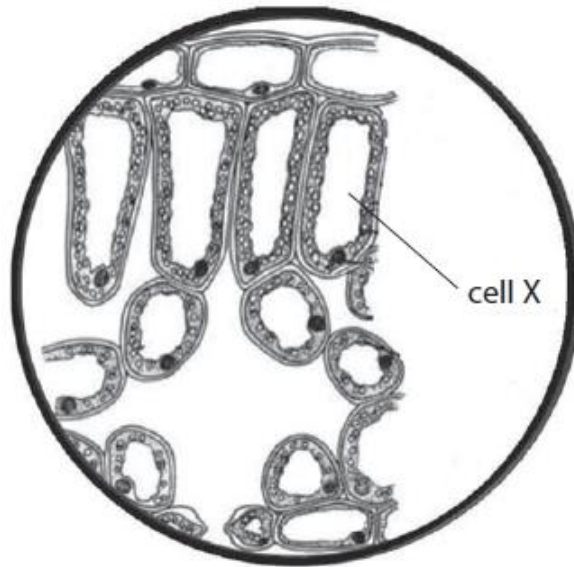
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**(Total for question = 9 marks)**

**Q3.**

A student uses a microscope to look at some cells from an organ found in a plant.

The diagram shows what the student observes through the microscope. One cell has been labelled X.



(a) Name the organ that the student observes.

(1)

.....  
(b) What is meant by the term **organ**?

(1)

.....  
.....  
.....  
(c) Draw a labelled diagram of cell X.

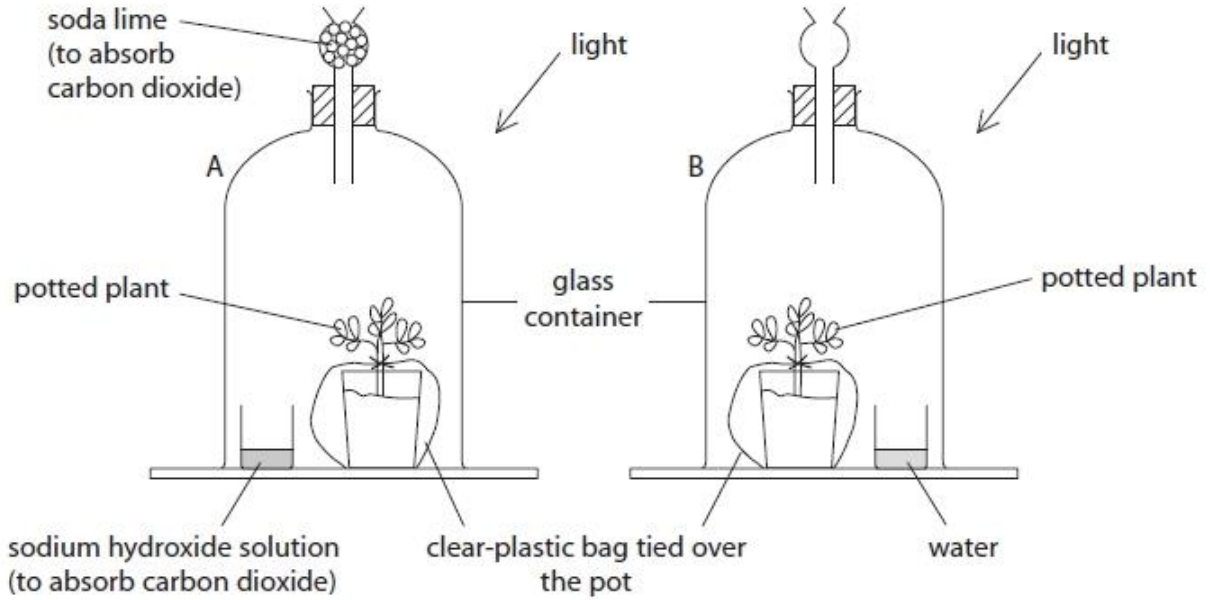
(3)

**(Total for question = 5 marks)**

**Q4.**

An experiment is set up to find out if carbon dioxide is needed by plants for photosynthesis. Two plants were destarched and then put in glass containers A and B as shown in the diagram.

After two days in the containers the plant leaves are tested for starch.



(a) (i) Suggest why the pots were covered with clear-plastic bags.

(2)

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

(ii) What is the purpose of container B?

(1)

.....

(b) The table describes the stages used to test the leaves for starch. It also gives the reason for each stage.

(i) Complete the table by describing stage 2 and giving the reason for stage 4.

(2)

Stage	Reason
1. boil leaf in water	make cell membranes permeable and prevent any starch digestion
2. .... .....	remove chlorophyll
3. dip leaf in water	hydrate leaf for iodine diffusion
4. add iodine solution to leaf	..... .....

(ii) Explain how stage 1 will prevent any starch digestion.

(1)

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

(iii) What is meant by the term **diffusion** mentioned in stage 3?

(1)

.....  
 .....

(iv) Describe the colour of the leaves you would expect after a starch test on

(2)

a leaf from container A

.....  
 .....

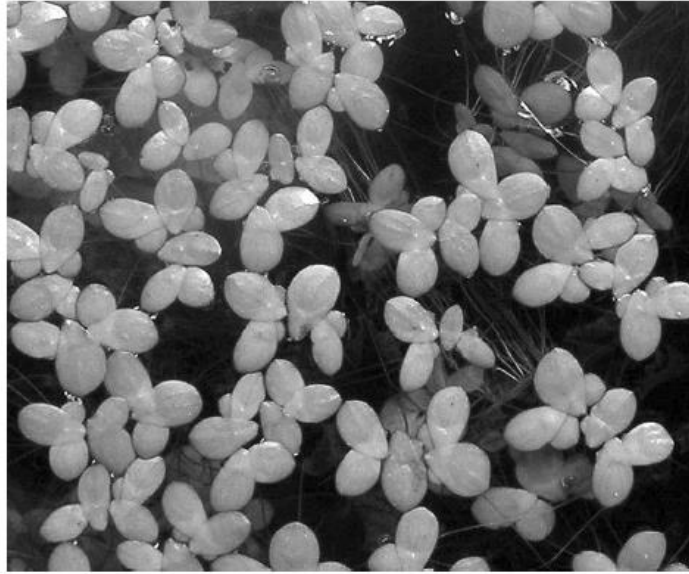
a leaf from container B

.....  
 .....

**(Total for question = 10 marks)**

Q5.

The photograph shows a water plant growing on the surface of a lake.



This water plant grows by increasing the number of its leaves. Many mineral ions help plants to grow.

(a) Describe how **one** named mineral ion helps plants to grow.

(2)

.....

.....

.....

.....

.....

.....

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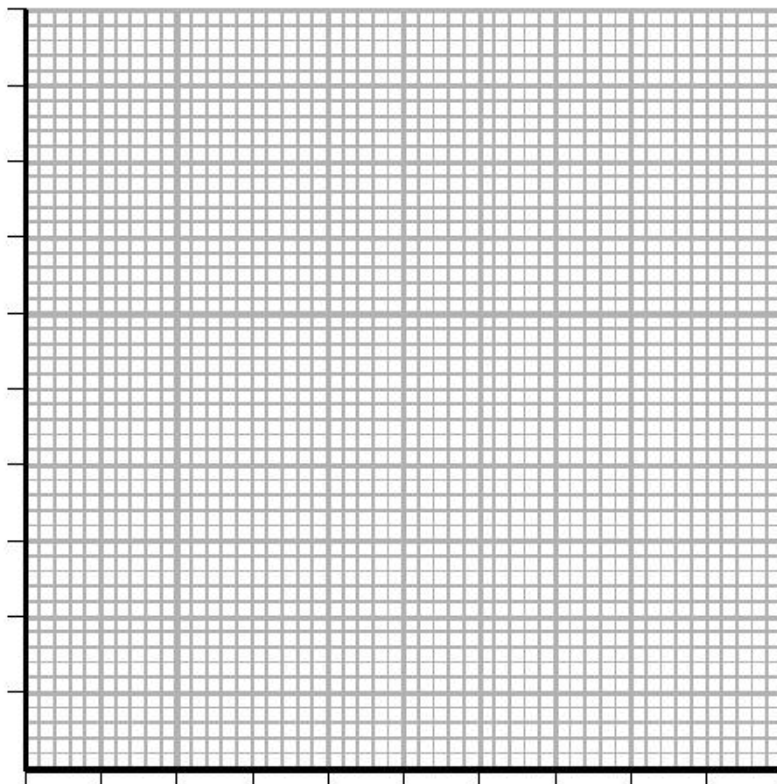
(b) Copper ions inhibit the growth of this water plant. To investigate this effect, a student put four plants with a total of 10 leaves into a beaker containing 400 cm<sup>3</sup> of mineral ion solution together with a copper coin. She repeated this with 400 cm<sup>3</sup> of the mineral ion solution without a copper coin. She counted the number of living leaves each day for the next eight days. The table shows her results.

Day	Number of living leaves	
	Mineral ion solution with a copper coin	Mineral ion solution without a copper coin
1	10	10
2	10	10
3	11	12
4	12	16
5	12	18
6	7	23
7	2	33
8	0	42

(i) Plot a line graph on the grid below to show the results of her investigation.

Use a ruler to join the points with straight lines.

(6)



(ii) In this investigation, the concentrations and volumes of the mineral ion solution and the species of water plant were kept the same.

Name **one other** variable that needs to be kept the same for the results of this investigation to be valid.

(1)

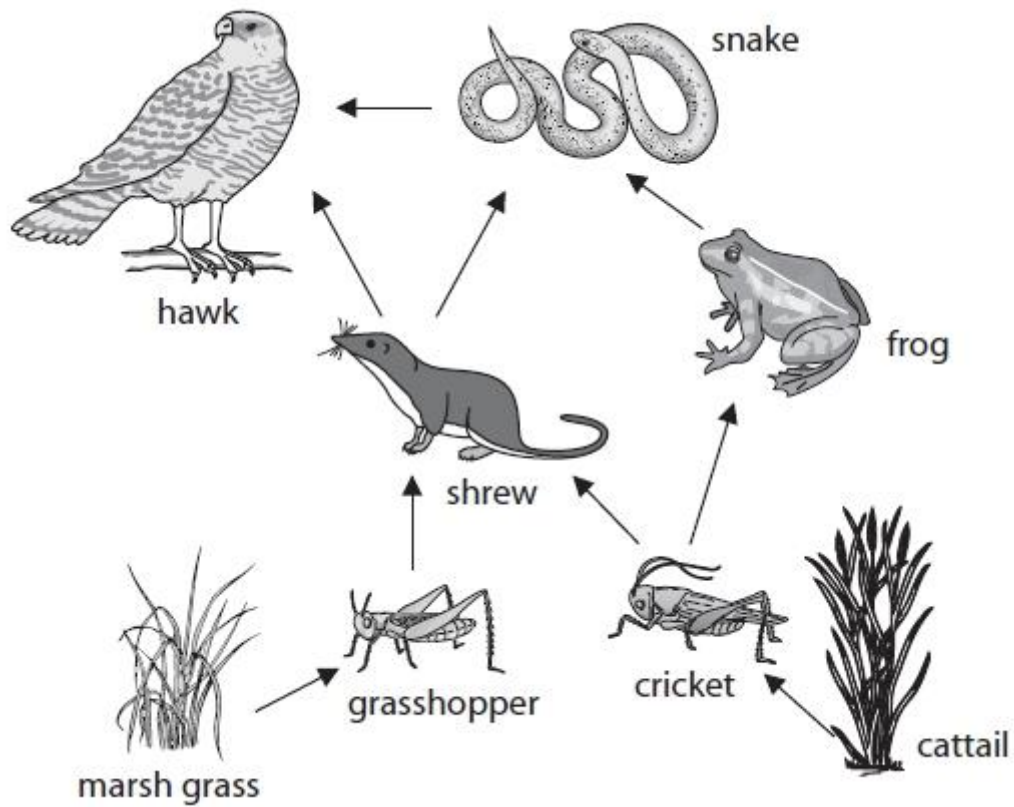
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**(Total for question = 9 marks)**



**Q6.**

The diagram shows a food web from a habitat.



(a) Use information in the food web to complete the table.

The first one has been done for you.

(4)

number of organisms	8
number of different types of plant	
number of animals	
number of primary consumers	
number of food chains	

(b) (i) The plants in this food web make the food for some of the animals to eat.

Give the name used to describe these plants.

(1)

.....

(ii) The hawk catches and eats its prey.

Give the name used to describe the hawk in this food web.

(1)

.....

(c) A pesticide can be used to kill the grasshoppers in this habitat.

(i) Describe the effect that killing grasshoppers would have on the number of shrews.

(1)

.....

.....

.....

(ii) Describe the effect that killing grasshoppers would have on the number of marsh grass plants.

(1)

.....

.....

.....

**(Total for question = 8 marks)**