

# **MILL HILL SCHOOL**

Specimen Paper for 13+ Entrance Examination

From January 2010

## **SCIENCE**

## Section A: Biology

### Question 1.

Jim is studying genetics.  
His teacher showed him a diagram of an animal cell.



(a) Draw a line from the letter C to a chromosome in the diagram.

**1 mark**

(b) Use the words below to complete the sentences.

inherit nucleus parents reproduction

All plants and animals have characteristics they ..... from their  
..... The 'recipe' for an individual plant or animal is carried in its  
genes. Genes are passed on from one generation to the next by the process called  
.....

**3 marks**  
**(4 marks)**

### Question 2

Jim's teacher told him that plants reproduce asexually.



(a) All the plantlets are genetically identical. Give the reason why.

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.....

**1 mark**

(b) Jim grew some plantlets in separate pots in the school greenhouse.  
Give **three** reasons why each plantlet might grow differently.

Reason 1 .....

.....

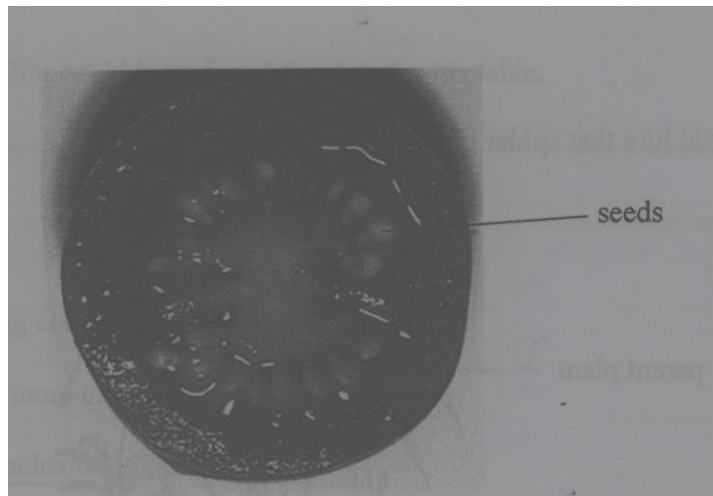
Reason 2 .....

.....

Reason 3 .....

.....

**3 marks**



c) Jim took some seeds from a tomato and grew them. The new plants grew to different heights and their fruits were different colours shapes and sizes. Tomato seeds are produced by sexual reproduction.

Explain how sexual reproduction leads to new plants having these different characteristics

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**2 marks**  
**(6 marks)**

**Question 3**

Sunhil and Ailsa investigated a food chain in a local park.

They counted the number of oak trees. They counted the number of aphids (greenfly) feeding on the leave of the oak trees. Then they counted the number of ladybirds feeding on the aphids.

- (a) In the space below draw the food chain linking the oak trees, aphids and ladybirds.

**2 marks**

- (b) Alisa says “The number of aphids depends on the number of oak trees”  
Sunhil says “The number of aphids depends on the number of ladybirds present”

Explain both of these statements.

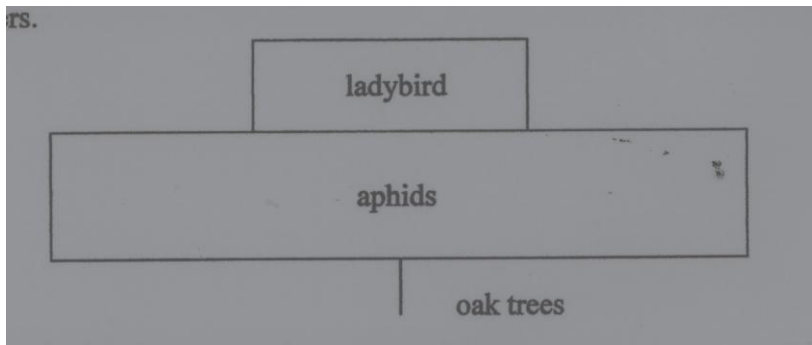
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**4 marks)**

(c) Table 1 shows the total number of organisms present in the food chain in the Wood

Name of organism	Number of organisms
Ladybird	350
Aphid	1150
Oak tree	5

This table is represented in the diagram below. The diagram is called a pyramid of numbers.



Explain the shape of the pyramid of numbers

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.....

.....

.....

**2 marks**  
**(10 marks)**