Rewarding Learning

Centre Number

Candidate Number

General Certificate of Secondary Education
2015–2016

Science: Single Award

Unit 1 (Biology)
Foundation Tier

MV18

[GSS11]

WEDNESDAY 24 FEBRUARY 2016, MORNING

Time

1 hour, plus your additional time allowance.

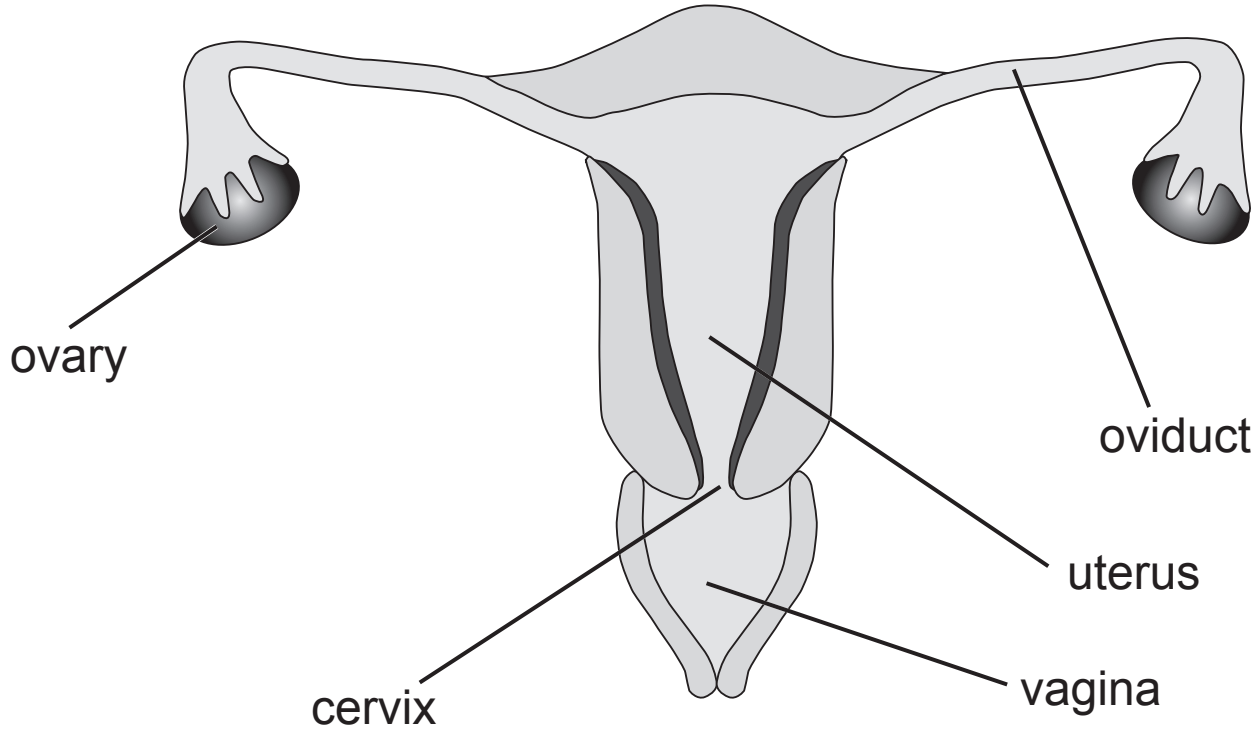
Instructions to Candidates

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
Write your answers in the spaces provided in this question paper.
Answer **all nine** questions.

Information for Candidates

The total mark for this paper is 60.
Figures in brackets printed at the end of each question indicate the marks awarded to each question or part question.
Quality of written communication will be assessed in Question **9**.

1 (a) The diagram below shows parts of the female reproductive system. [3 marks]



Complete the table below.

Choose from:

cervix **ovary** **uterus** **vagina** **oviduct**

Part of female reproductive system	**Function**
	produces eggs (ova)
	where the baby develops
	where fertilisation takes place

(b) Contraceptives are used to prevent pregnancy.

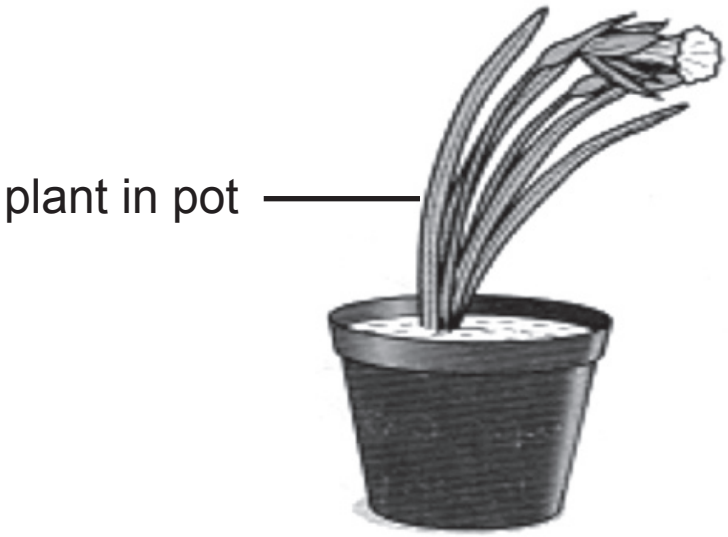
(i) Using lines, link each method of contraception with its correct description. [2 marks]

Method	Description
condom	changes a woman's hormone levels and stops eggs being released
contraceptive pill	prevents eggs from reaching the uterus
	barrier to prevent sperm entering the female

(ii) Give **one** reason why some people do not approve of using contraceptives. [1 mark]

_____

2 The diagram below shows a plant which has been given light from one direction **only** over a period of two weeks.



(a) Draw an arrow on the diagram to show the direction of light. [1 mark]

(b) (i) Complete the sentence below. [2 marks]

Choose from:

photosynthesis **hormone** **phototropism**

neurone **growth**

This plant's response to light is called

_____

and is controlled by a

_____ .

(ii) Explain fully how this response benefits the plant.
[2 marks]

3 **(a)** The table below gives statements about some food tests.

(i) Complete the table by placing a tick (✓) if the statement is correct for each food group.
Only use **one** tick for each food group. [3 marks]

	Statement		
Food group	**Biuret reagent is used**	**Iodine changes to blue/black**	**Test solution is heated**
protein			
sugar			
starch			

(ii) From the table name the food group that is used for growth and repair in the body. [1 mark]

_____

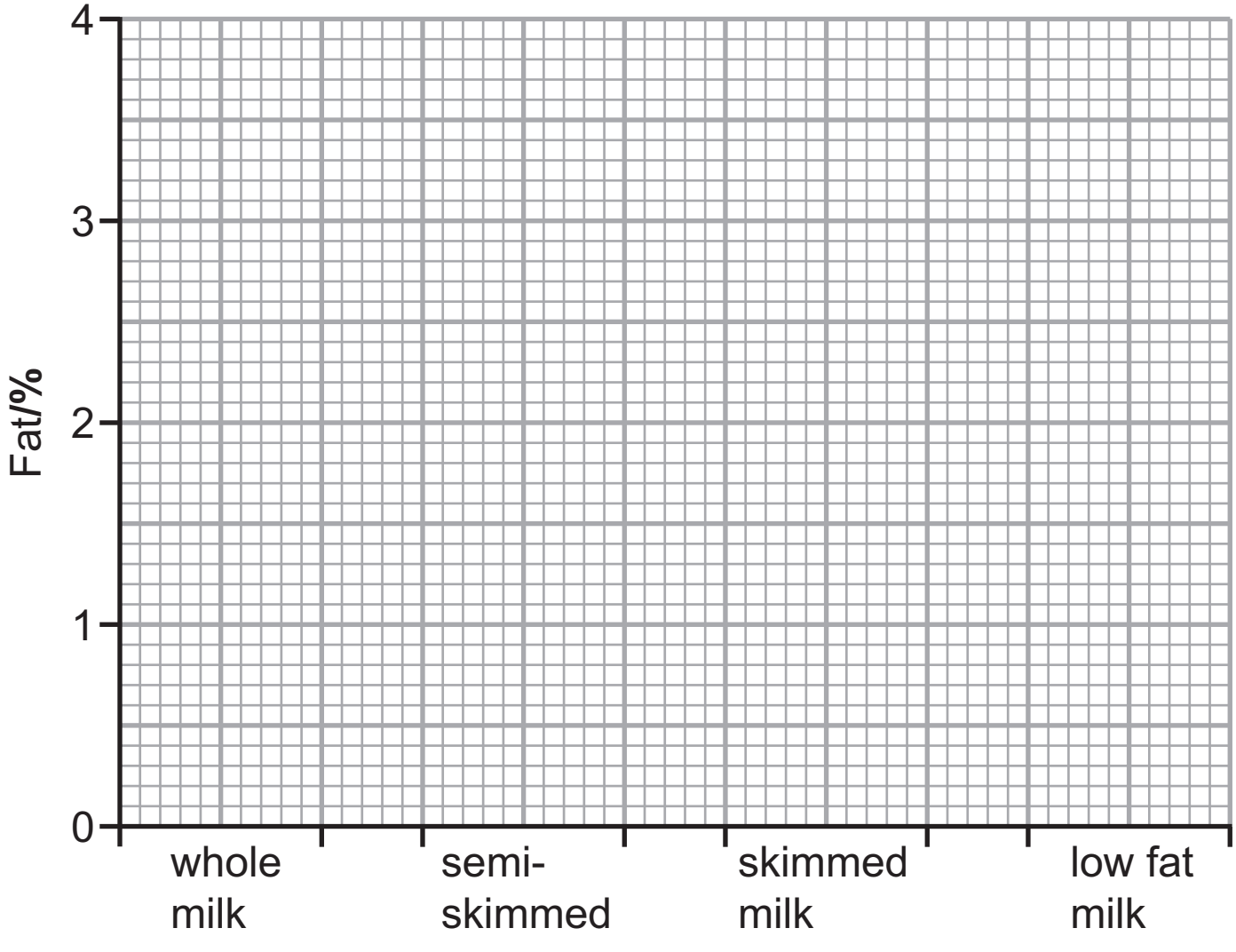
(b) Give **one** function of water in the body. [1 mark]

_____

(c) The table below shows the percentage of fat in four different types of milk.

Type of milk	**Fat/%**
whole milk	3.5
semi-skimmed	1.7
skimmed milk	0.3
low fat milk	1.0

On the grid below draw a **bar chart** of this information. [2 marks]



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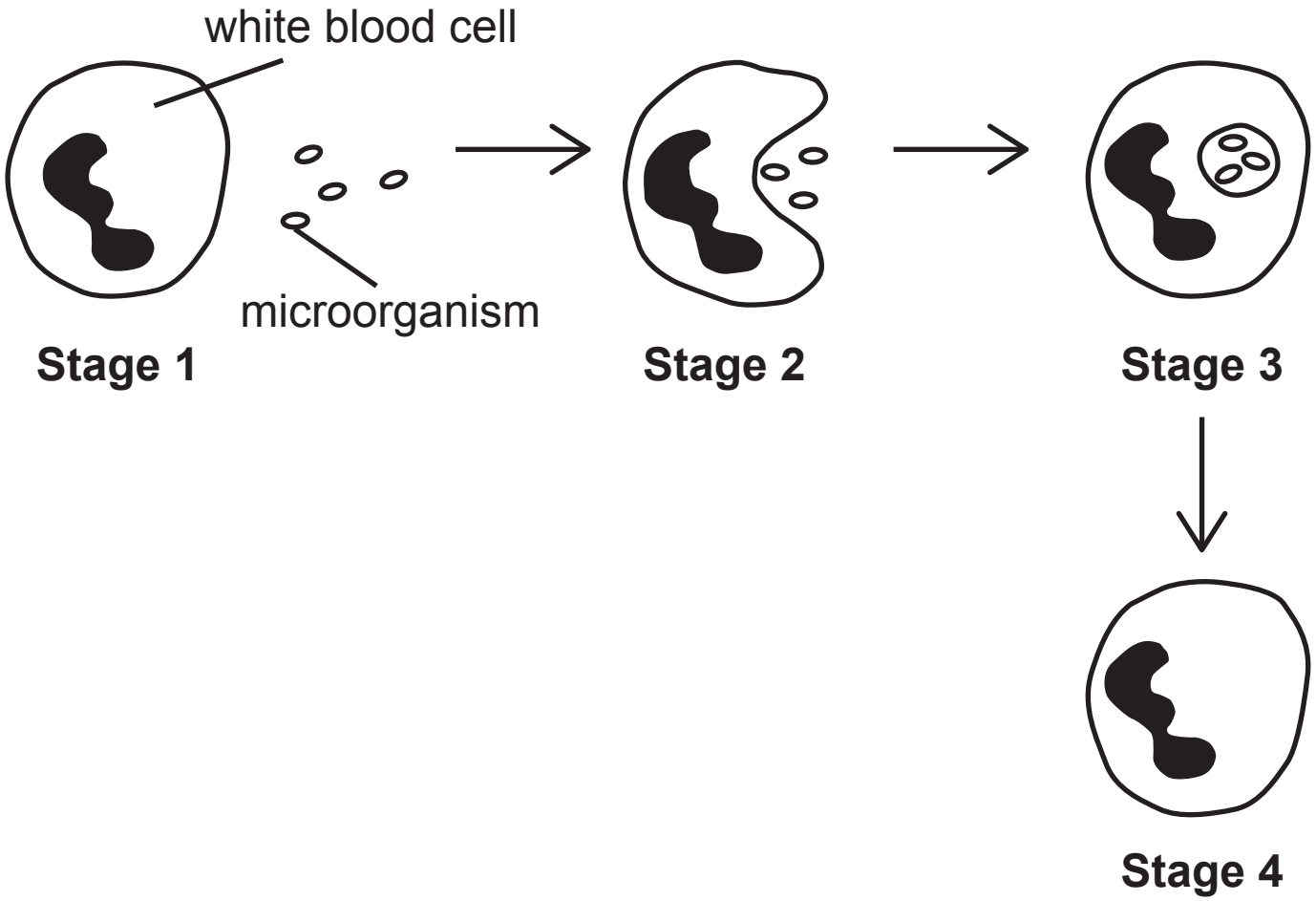
4 **(a)** The diagram below shows the process of phagocytosis.



(i) Using the diagram and your knowledge describe the process of phagocytosis. [2 marks]

_____

_____

_____

_____

(ii) Name the type of white blood cell which carries out phagocytosis. [1 mark]

_____

(b) Many newborn babies are fed breast milk by their mothers for the first few months after birth. The breast milk contains antibodies.

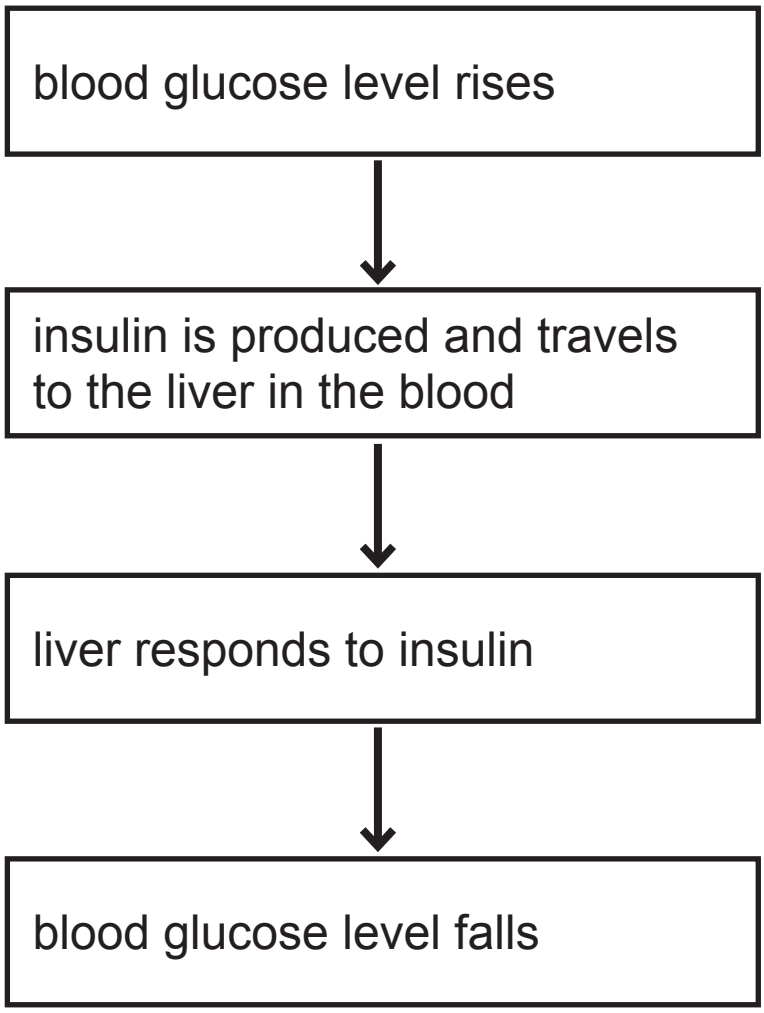
The graph below shows the average antibody levels provided by breast milk over the first 24 months after birth.

(i) Name the type of immunity shown by this graph. [1 mark]

_____

(ii) Use the graph to suggest when the mother might stop breastfeeding because of a reduced benefit to the baby.
Explain your answer. [2 marks]

5 **(a)** The flow chart below shows some of the stages involved in the control of the blood glucose level in the human body.



(i) Name the organ that produces insulin. [1 mark]

_____

(ii) Using the information above give **two** reasons why insulin is described as a hormone. [2 marks]

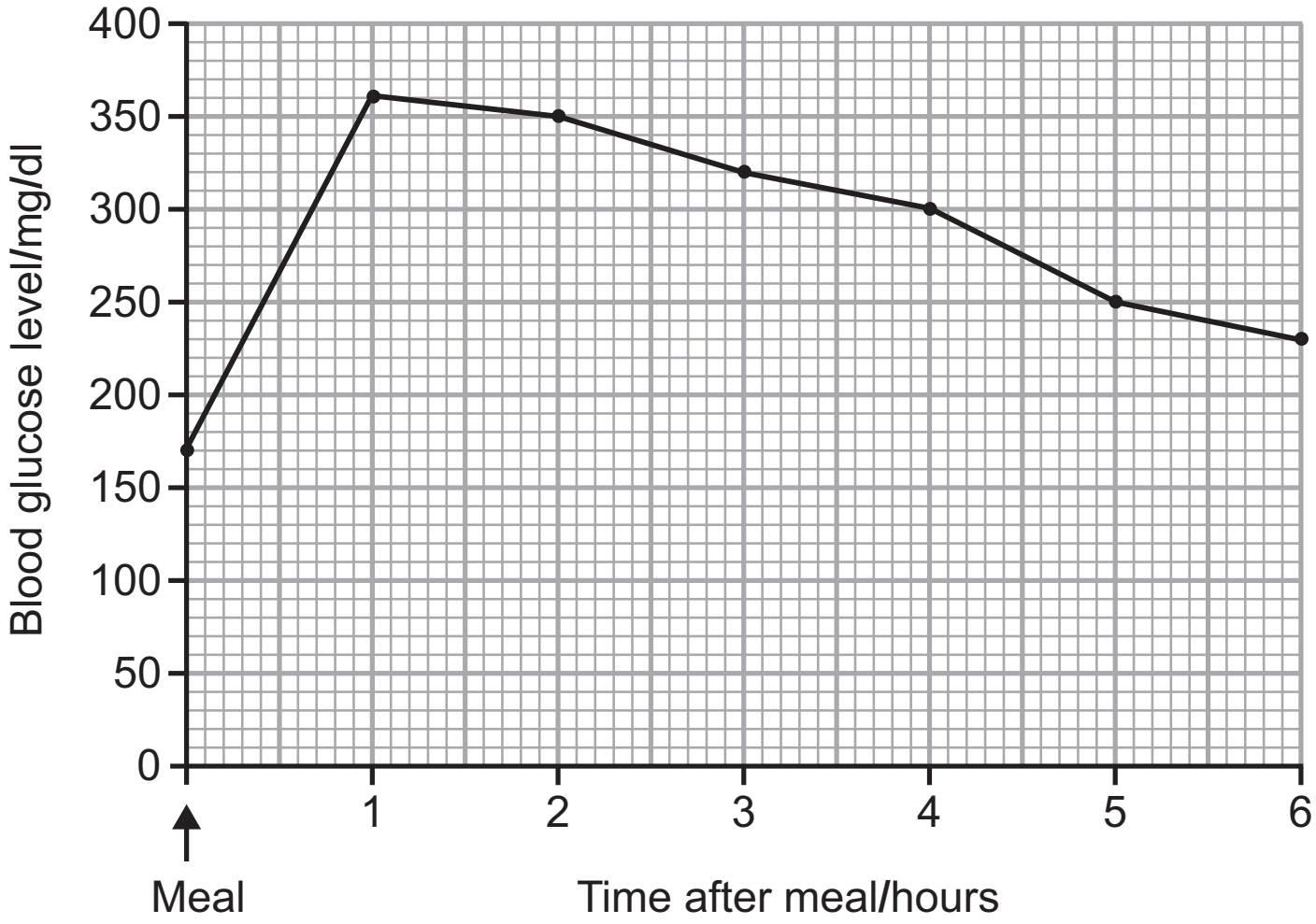
1. _____

2. _____

(iii) Complete the following sentence. [1 mark]

The blood glucose level falls because glucose is converted to _____ in the liver.

(b) The graph below shows the blood glucose level in a person with Type 1 diabetes after a meal.



(i) Calculate the difference in the blood glucose level from when the meal was taken to 6 hours later. [2 marks]

(Show your working out.)

_____ mg/dl

(ii) Type 1 diabetes is managed by self-injection of insulin. Suggest a time this person may have injected insulin. [1 mark]

_____ hour(s) after meal

(iii) Describe fully the trend shown by this graph. [2 marks]

_____

_____

_____

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6 **(a)** The table below shows information about different sources used to produce electricity in the United Kingdom.

	Electricity produced/%	**Cost to customer per unit of electricity/pence**	**Carbon dioxide produced**
coal	22.2	2.5	Yes
gas	23.8	3.1	Yes
wind	5.2	5.5	No
wave	1.2	6.8	No

Carbon dioxide is a greenhouse gas. Increasing levels of carbon dioxide are being linked to global warming.

(i) Suggest why the UK government wants to produce more electricity from wind and wave sources. Explain why customers might disagree. [2 marks]

_____

_____

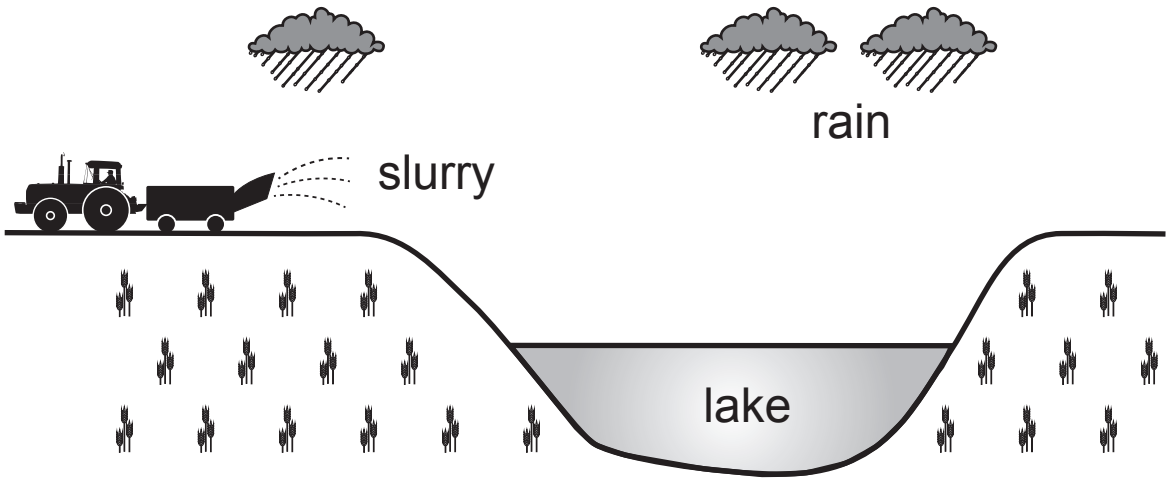
_____

_____

(ii) Apart from a rise in temperature, state **one** effect of global warming. [1 mark]

_____

(b) The diagram below shows slurry being spread onto farmland.



(i) Using the diagram and your knowledge give **two** reasons why the lake is at risk of pollution due to the slurry. [2 marks]

1. _____

_____

2. _____

_____

The table below gives some information about this lake from 2006 to 2010.

	2006	2007	2008	2009	2010
level of nitrates	very high	high	moderate	low	very low
oxygen in water/mg/l	3	5	8	10	12
number of species of fish in the lake	6	8	10	20	26
level of bacteria	very high	high	moderate	low	very low

Use the information in the table to answer the questions below.

(ii) Explain why the oxygen level has increased between 2006 and 2010. [1 mark]

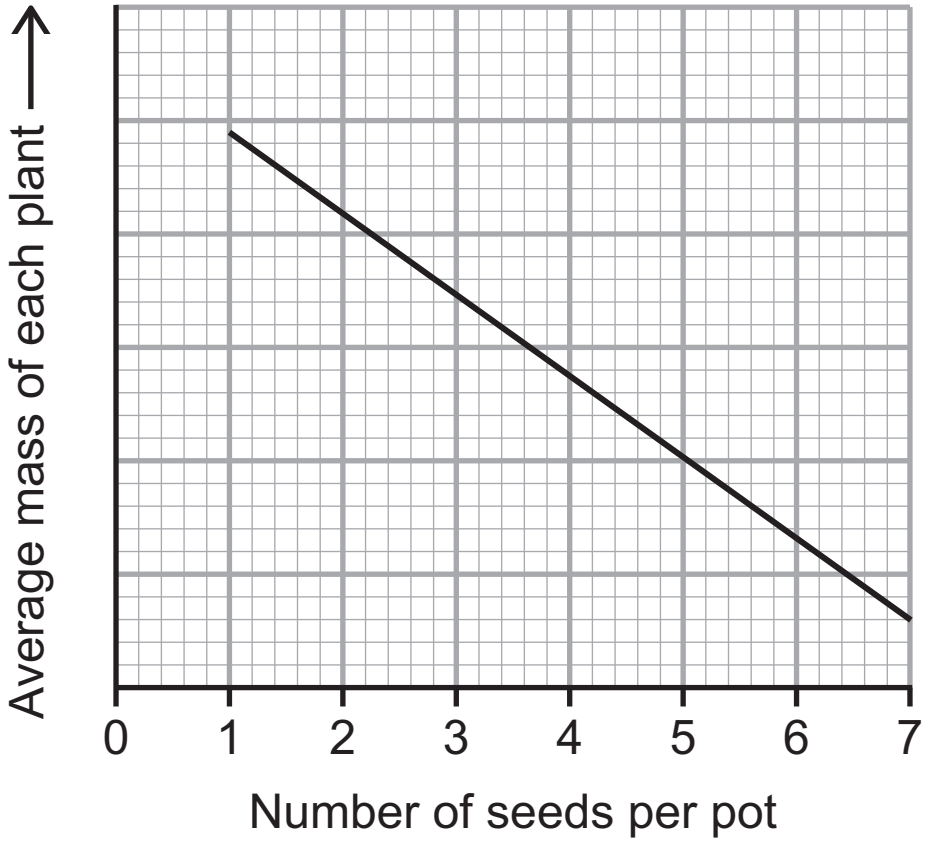
_____

_____

(iii) Give **one** effect of this increase in oxygen. [1 mark]

_____

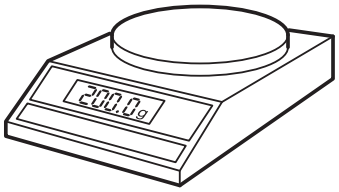
7 The graph below shows the results of an investigation into the effect of the number of seeds per pot on the average mass of each plant.



(a) Describe and explain these results. [2 marks]

(b) The equipment used to obtain these results is shown below.

plant pot(s) with compost



balance

flower seeds

watering can

(i) Describe fully how this equipment could be used to carry out the investigation. [3 marks]

(ii) Give **two** things that need to be done to give valid results (fair test) in this investigation. [2 marks]

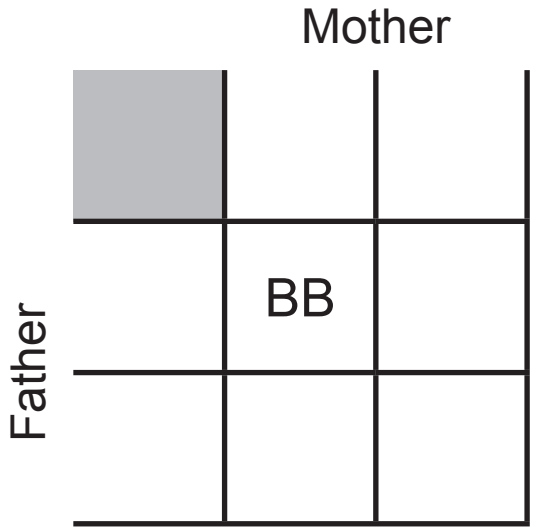
1. _____

2. _____

8 **(a)** Cystic fibrosis is an inherited disease.
It is possible for two heterozygous parents without cystic fibrosis to have a child with cystic fibrosis.

(i) Complete the Punnett square to show how two heterozygous parents could have a child with cystic fibrosis. [2 marks]

B = dominant allele
b = recessive allele



(ii) In the Punnett square above circle the genotype for cystic fibrosis. [1 mark]

(iii) How many different genotypes are shown in the Punnett square? [1 mark]

_____

(b) Explain the term ‘homozygous’. [1 mark]

(c) Explain the genetic terms dominant and recessive. [2 marks]

dominant

recessive

9 Name and describe the two types of variation in living things and give **one** example of each. [6 marks]

In this question you will be assessed on your written communication skills including the use of specialist scientific terms.

THIS IS THE END OF THE QUESTION PAPER

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Question Number	**Marks**
1	
2	
3	
4	
5	
6	
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8	
9	
Total Marks	