



General Certificate of Secondary Education
2015–2016

Centre Number

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Candidate Number

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Science: Single Award

Unit 1 (Biology)
Foundation Tier



[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.

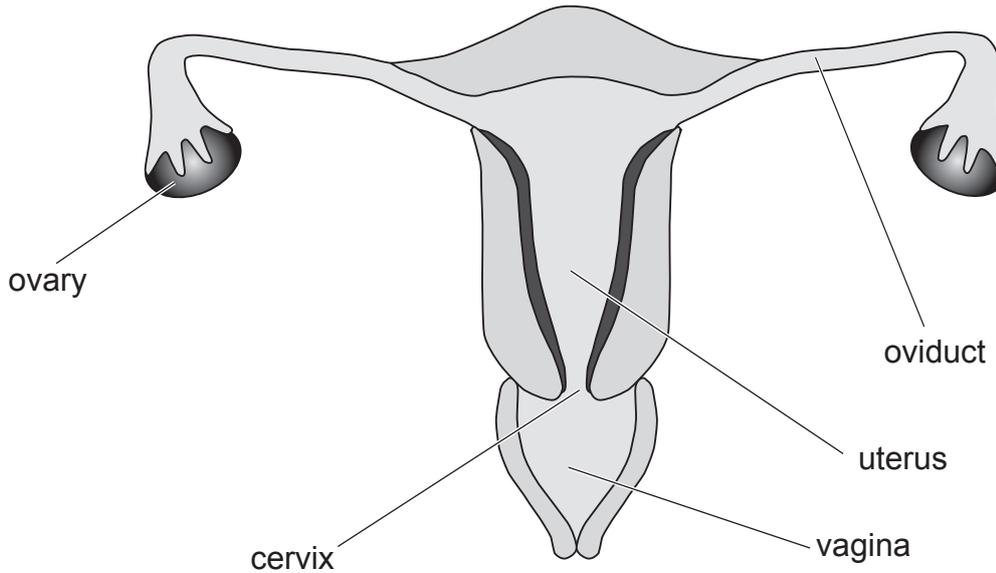
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

Quality of written communication will be assessed in Question **9**.

For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	
9	

Total Marks	
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1 (a) The diagram below shows parts of the female reproductive system.



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Fill in the table below.

Choose from the words below.

cervix ovary uterus vagina oviduct

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

[3]

Examiner Only	
Marks	Remark

(b) Contraceptives are used to prevent or stop pregnancy.

- (i) Draw lines to join each method of contraception with its correct description.

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

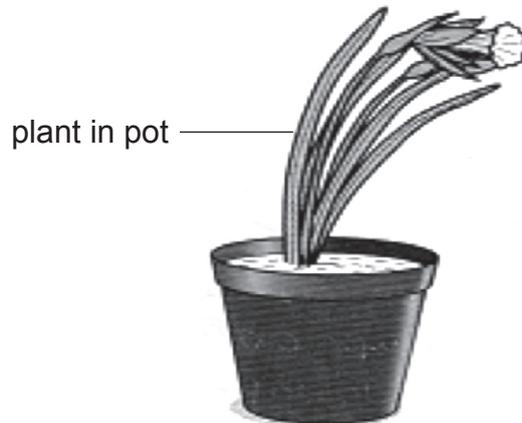
[2]

- (ii) Write down **one** reason why some people do not agree with the use of contraceptives.

_____ [1]

Examiner Only	
Marks	Remark

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



Source: CCEA

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

- (b) (i) Fill in the sentence below.

Choose from the following words.

photosynthesis

hormone

phototropism

neurone

growth

This plant's response to light is called _____

and is controlled by a _____. [2]

- (ii) Explain fully how this response helps the plant.

_____ [2]

Examiner Only	
Marks	Remark

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(Questions continue overleaf)

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

- (i) Fill in the table by placing a tick (✓) if the statement is correct.
Do this for each food group.
Only use **one** tick for each food group.

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

[3]

- (ii) From the table name the food group that is used for growth and repair in the body.

[1]

- (b) Write down **one** function of water in the body.

[1]

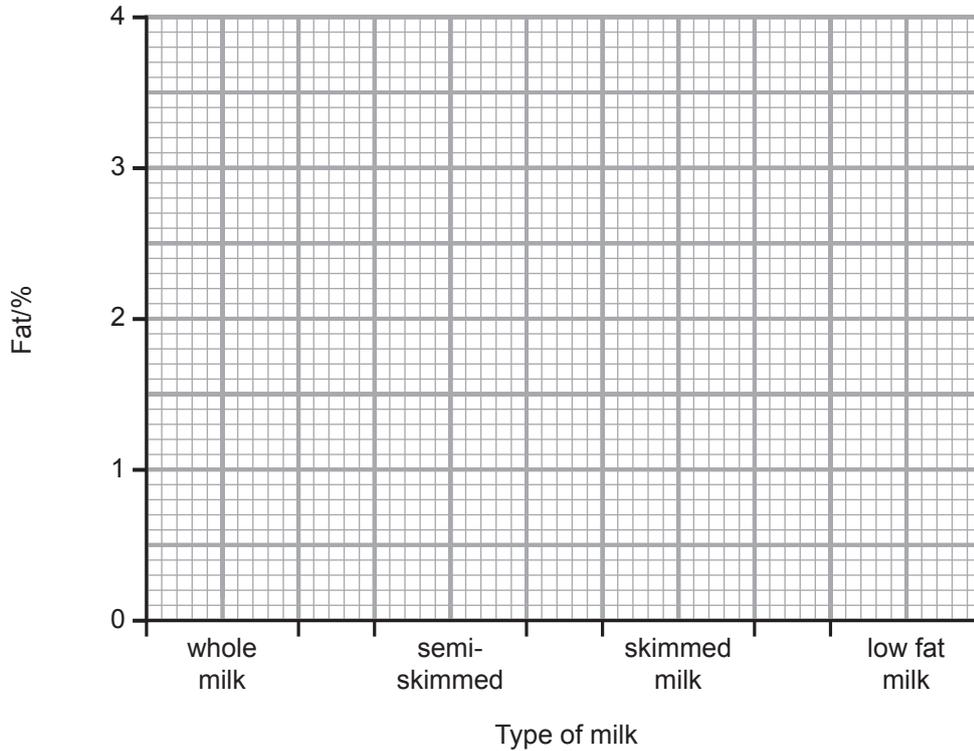
Examiner Only	
Marks	Remark

(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

© Nutrition, Types of Milk. Dairy Council for Northern Ireland.
<http://www.dairyCouncil.co.uk/consumers/nutrition/types-of-milk>

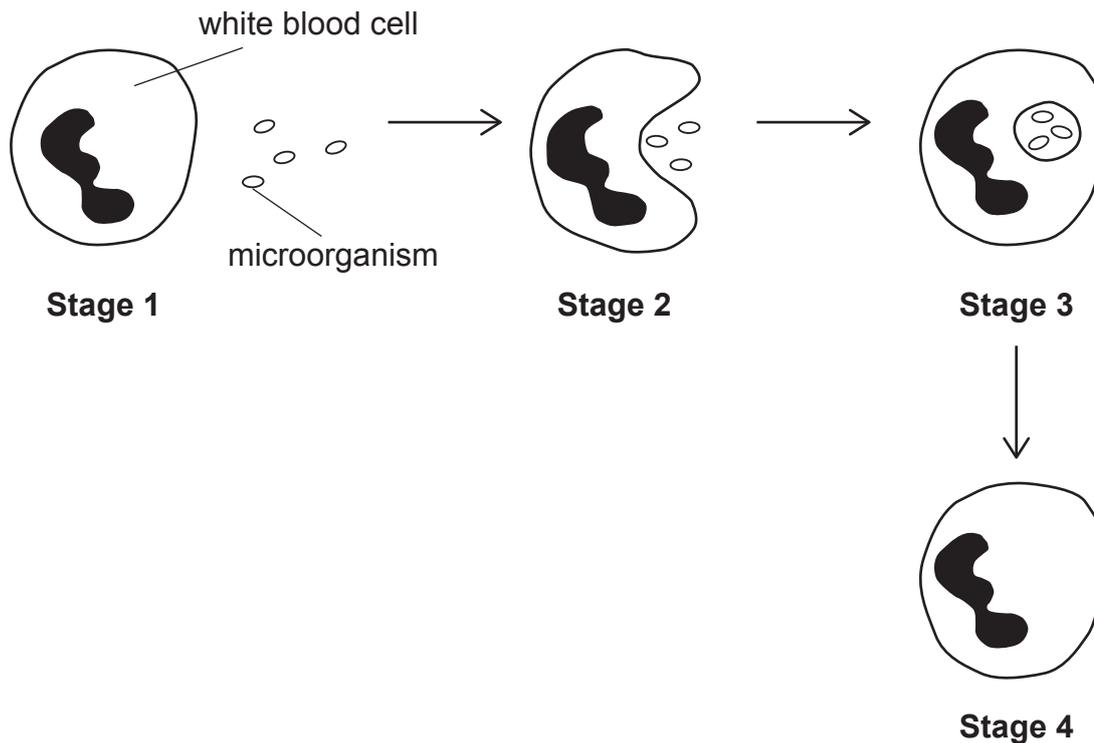
On the grid below draw a **bar chart** of this information.



[2]

Examiner Only	
Marks	Remark

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



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(i) Using the diagram and your knowledge describe the process of phagocytosis.

[2]

(ii) Name the type of white blood cell which carries out phagocytosis.

[1]

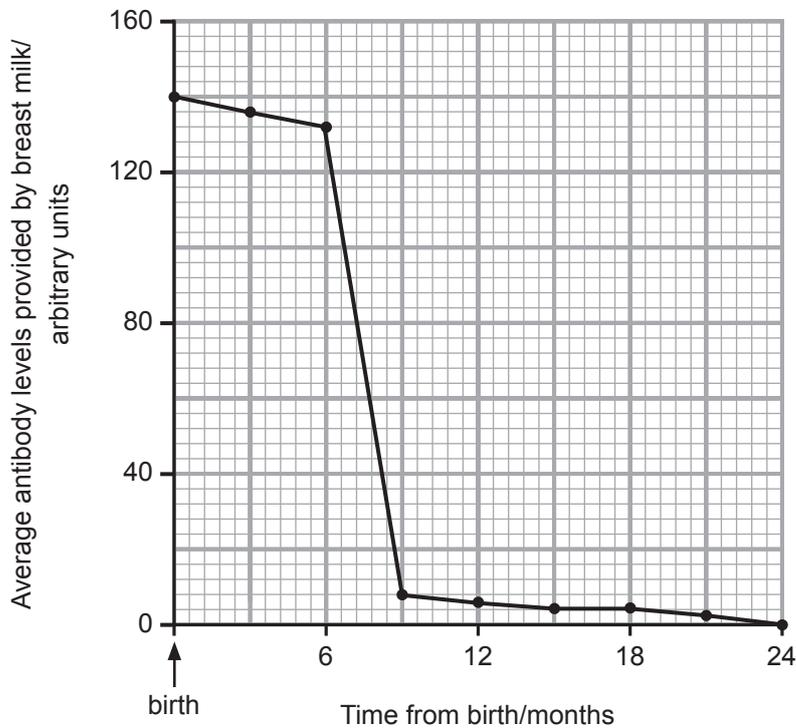
Examiner Only

Marks

Remark

- (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.

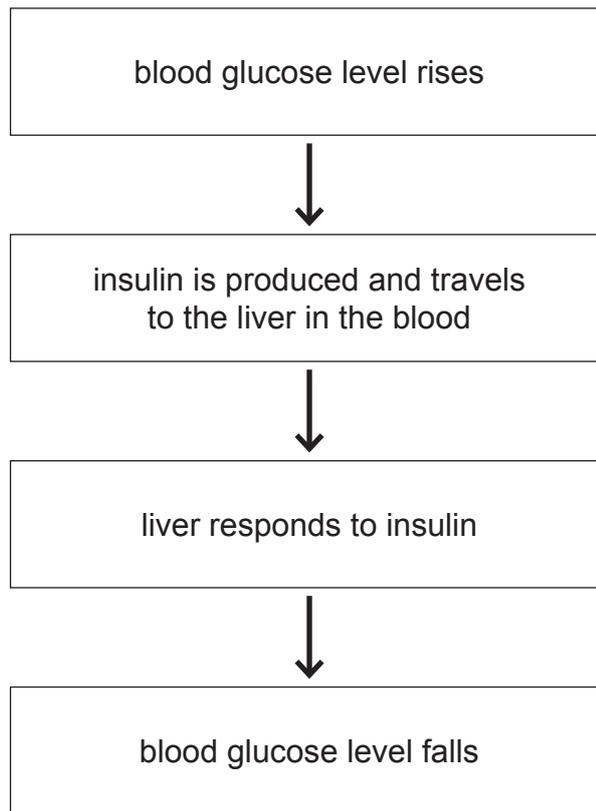
[1]

- (ii) Look at the graph and suggest when the mother might stop breastfeeding because there is less benefit to the baby. Explain your answer.

[2]

Examiner Only	
Marks	Remark

- 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]

- (ii) Using the information above write down **two** reasons why insulin is described as a hormone.

1. _____

2. _____ [2]

- (iii) Fill in the following sentence.

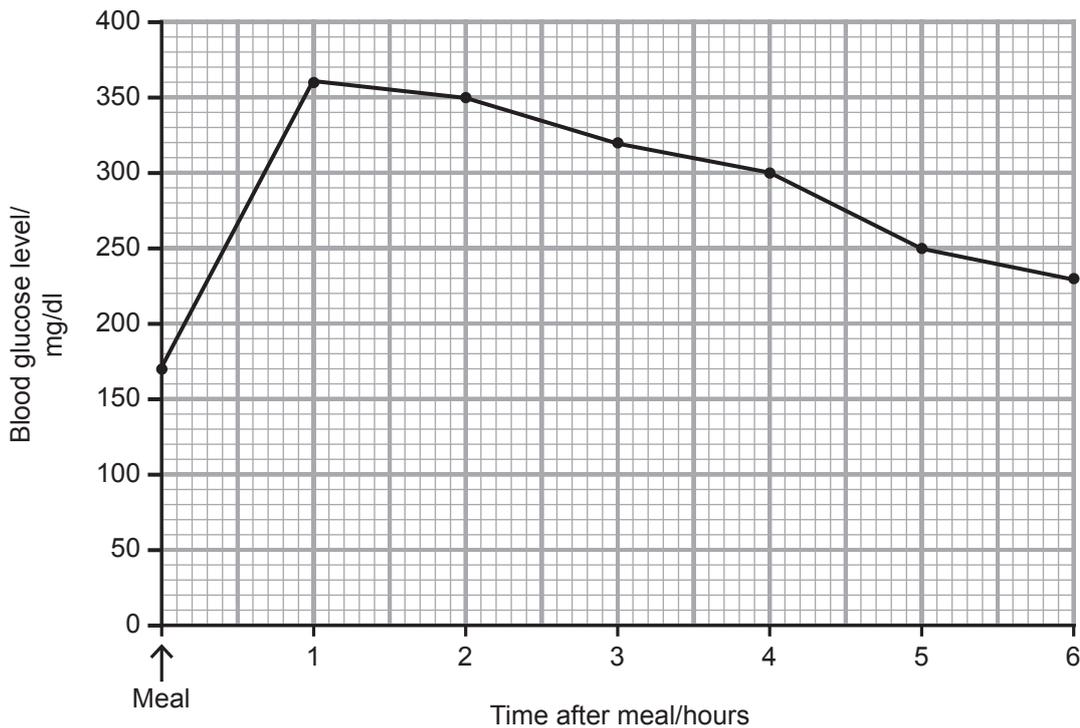
The blood glucose level falls because glucose is converted

to _____ in the liver.

[1]

Examiner Only	
Marks	Remark

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



(i) Work out the difference in the blood glucose level from when the meal was taken to 6 hours later.

(Show your working out.)

_____ mg/dl [2]

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

_____ hour(s) after meal [1]

(iii) Look carefully at the graph.
Describe fully what is happening over the six hours.

_____ [2]

Examiner Only	
Marks	Remark

- 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

Electricity produced - © Crown Copyright <https://www.gov.uk/government/statistics/electricity-section-5-energy-trends>.
Cost - Copyright © 2005 The Telegraph & The Royal Academy of Engineering, 26 March 2005.

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

- (i) Write down a reason why the UK government wants to produce more electricity from wind and wave sources. Using the table above explain why customers might disagree.

[2]

- (ii) A rise in temperature is one effect of global warming. Write down **one** other effect of global warming.

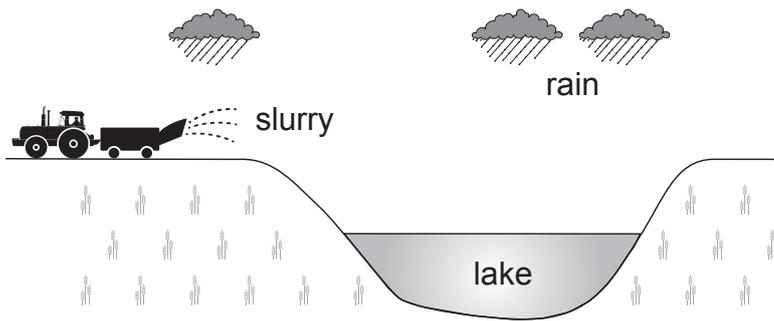
[1]

Examiner Only

Marks

Remark

- (b) The diagram below shows slurry being spread onto farmland. Slurry contains nitrates.



Source: CCEA

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

1. _____

2. _____

- [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]

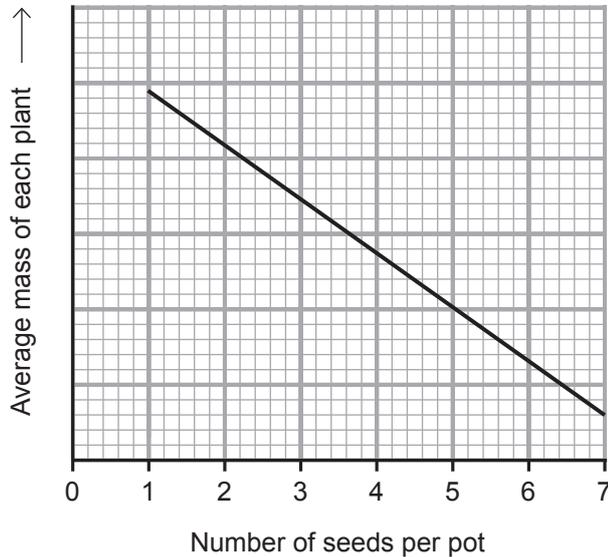
- (iii) Write down **one** effect of this increase in oxygen.

_____ [1]

Examiner Only
 Marks Remark

- 7 Seeds were planted into seven pots.
Each pot contained a different number of seeds.
The plants were left to grow.

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.



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- (a) Describe and explain these results.

[2]

Examiner Only	
Marks	Remark

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



© Chimpinski / iStock / Thinkstock

plant pot(s)
with compost



© CCEA

balance



© cole matt / iStock / Thinkstock

flower seeds



© Creative_Outlet / iStock / Thinkstock

watering can

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

[3]

(ii) Write down **two** things that need to be done to give valid results (fair test) in this investigation.

1. _____

2. _____

[2]

Examiner Only	
Marks	Remark

- 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.

B = dominant allele
b = recessive allele

		Mother	
Father		BB	

[2]

- (ii) In the Punnett square above circle the genotype for cystic fibrosis.

[1]

- (iii) How many different genotypes are shown in the Punnett square?

[1]

- (b) Explain the term 'homozygous'.

_____ [1]

Examiner Only	
Marks	Remark

(c) Explain the genetic terms dominant and recessive.

dominant

recessive

[2]

Examiner Only	
Marks	Remark

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