



Rewarding Learning

General Certificate of Secondary Education
2014–2015

Centre Number

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Candidate Number

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Science: Single Award

Unit 1 (Biology)
Foundation Tier



[GSS11]

TUESDAY 24 FEBRUARY 2015, MORNING

TIME

1 hour.

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(a)**.

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

Total Marks	
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3 (a) The following table gives information about some pupils in a class.

Pupil	Characteristic			
	Can roll tongue	Height/cm	Weight/kg	Eye colour
Maeve	yes	141	39	blue
Mary	yes	152	37	brown
Sean	yes	152	41	brown
John	yes	155	46	blue
Katrina	no	146	42	blue

(i) Which **two** characteristics show continuous variation?

_____ and _____ [1]

(ii) Calculate the percentage of pupils that have brown eyes.

(Show your working out.)

_____ % [2]

Examiner Only	
Marks	Remark

(b) The photograph below shows some swans in a small shallow lake.



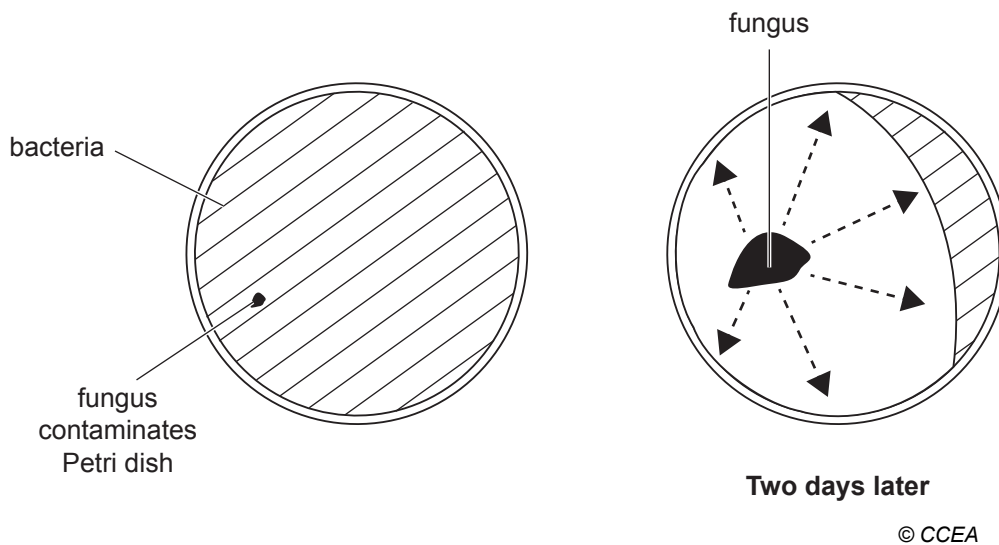
Source: Chief Examiner

The swans feed on plants, insects and water snails from the bottom of the lake. Using only the information provided, explain fully **one** way the swans are adapted for feeding.

 [2]

Examiner Only	
Marks	Remark

- 4 (a) The diagram below shows what can happen if a Petri dish containing bacteria is contaminated by fungus.



- (i) Describe and explain the effect of contamination by the fungus.

_____ [2]

- (ii) Name the scientist who first observed the effect of fungus on bacteria.

Choose from:

Pasteur Wilson Fleming

_____ [1]

- (iii) Name the antibiotic developed from this fungus.

_____ [1]

Examiner Only	
Marks	Remark

(b) Mushrooms are another type of fungus that are often used in cooking. They contain very little carbohydrate and fat but are rich in vitamins and minerals. Mushrooms also contain a large amount of water.

(i) Using the information above, suggest why mushrooms are suitable for someone who is trying to reduce energy intake.

_____ [1]

(ii) Give **one** function of water in the body.

_____ [1]

Examiner Only	
Marks	Remark

(b) The table below shows information about some methods of contraception.

Examiner Only	
Marks	Remark

Method of Contraception	Permanent	Advantages	Disadvantages
Condom	no	protects against sexually transmitted diseases	mainly reliable but could fail
Contraceptive pill	no	very reliable	can cause side-effects such as weight gain
Male and female sterilisation	yes	almost 100% reliable	very difficult or impossible to reverse

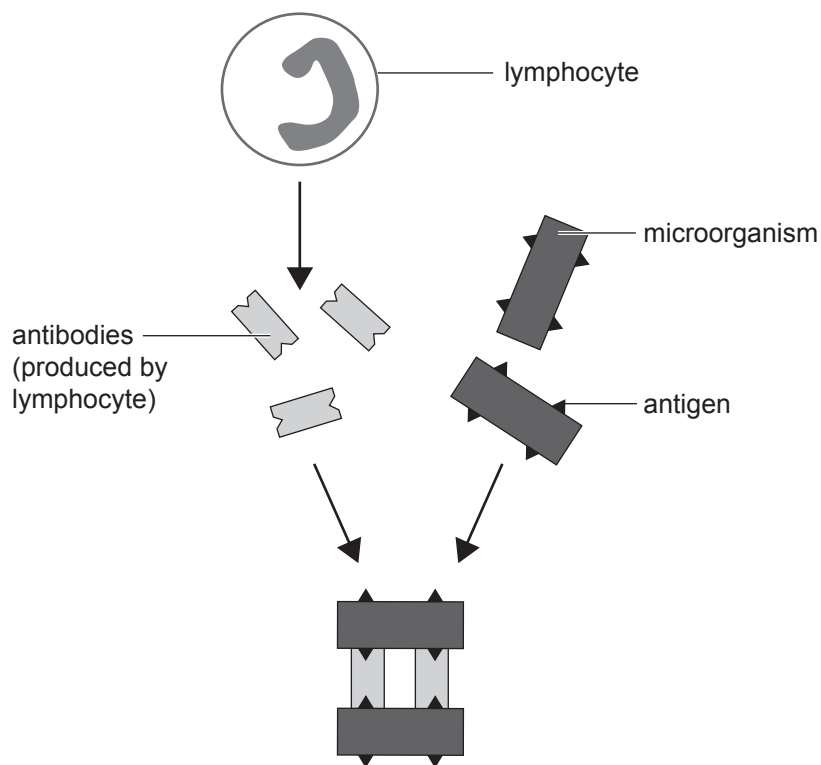
(i) Explain how the condom prevents pregnancy.

[2]

(ii) Using the information in the table, explain why many just-married 20 year olds prefer condoms, rather than the pill or sterilisation, as a contraceptive method.

[3]

- 6 (a) The diagram below shows how lymphocytes (white blood cells) produce antibodies in response to infection by microorganisms.



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- (i) Using the diagram and your knowledge, describe and explain how antibodies fight infection.

[3]

- (ii) Another type of white blood cell also fights infection by phagocytosis. Describe the process of 'phagocytosis'.

[2]

Examiner Only	
Marks	Remark

- 7 (a) Albinism is an inherited condition in which affected individuals are unable to make the skin pigment melanin. The melanin gives skin its colour, but more importantly, helps protect against the Sun's harmful UV rays.

Albinism is caused by a mutation in the gene that controls the production of melanin.

- (i) Name the core component in a gene that is damaged in a mutation.

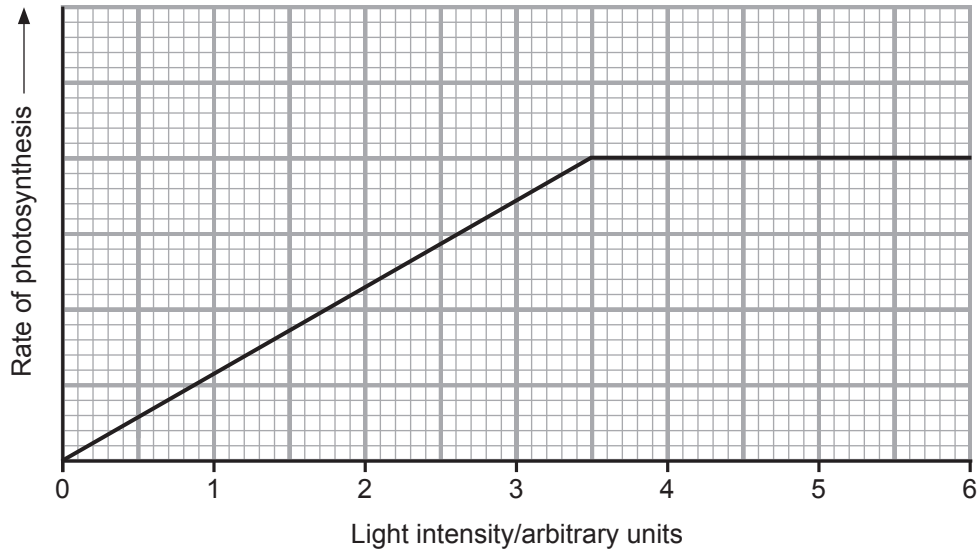
_____ [1]

- (ii) Explain fully why people with albinism are advised to stay out of strong sunlight.

_____ [2]

Examiner Only	
Marks	Remark

The graph below shows the effect of light intensity on the rate of photosynthesis in tomato plants in a glasshouse. In glasshouses, the light intensity can be increased by using artificial lighting.



- (i) From the graph, state the best light intensity to use that would give the most profit if the tomatoes were grown for sale. Explain your choice.

Light intensity _____ arbitrary units

Explanation _____

 _____ [2]

- (ii) Apart from artificial lighting to increase light intensity, explain **one** other way in which glasshouses are adapted for increasing the rate of plant growth.

 _____ [1]

Examiner Only	
Marks	Remark

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