

	Centre Number					
	Ca	ndida	te Nu	mber		
	Ca	ndida	te Nu	mber		

General Certificate of Secondary Education 2014–2015

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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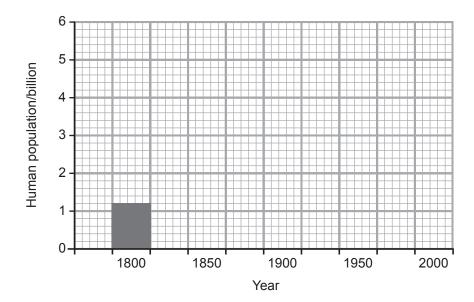
Choose from:							
tuberculosis	bacteria	flu	fun	gi			
Type of microorganis	sm	Dis	ease				
		athlet	e's foot				
virus							
		chla	mydia				
	·				[[3]	
Complete the following se	entences.						
Choose from:							
poisoned h	nair sk	kin	trapped				
poisoned h					t most		
	ad	cts as a b	arrier to	prevent		h	
The	the body. M	cts as a b icroorgar	arrier to	prevent	througl	h	
Themicroorganisms entering	the body. M	cts as a b icroorgar	arrier to	prevent	througl	h [2]	
The microorganisms entering the mouth and nose are _	the body. M	cts as a b icroorgar	arrier to	prevent	througl		
The microorganisms entering the mouth and nose are _	the body. M	cts as a b icroorgar	arrier to	prevent	througl		
The microorganisms entering the mouth and nose are _	the body. M	cts as a b icroorgar	arrier to	prevent	througl		
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The microorganisms entering the mouth and nose are _	the body. M	cts as a b icroorgar	arrier to	prevent	througl		
The microorganisms entering the mouth and nose are _	the body. M	cts as a b icroorgar	arrier to	prevent	througl		

2 The following table shows the change in human population between the years 1800 and 2000.

Examin	er Only
Marks	Remark
Marks	Remark

Year	Human population/ billion
1800	1.2
1850	1.4
1900	1.8
1950	2.4
2000	6.0

(a) Using the information in the table, complete the bar chart below.



[2]

(b) Describe the trend shown by this information.

______[1]

(c)		mans are responsible for causing the extinction of some species, uding many types of fish.	Examin Marks	er Only Remark
	(i)	What is meant by the term 'extinction'?		
		[1]		
	(ii)	Below are some features of modern sea fishing.		
		Circle two features that may protect fish stocks and help prevent extinctions.		
		large fishing nets		
		refrigerators to store caught fish		
		nets with large mesh sizes		
		limits on the number of fishing boats		
		boats with good navigation systems [2]		

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

Examiner Only				
Marks	Remark			

	Characteristic					
Pupil	Can roll tongue	Can roll tongue Height/cm Weight/kg				
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]

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

Examiner Only				
Marks	Remark			



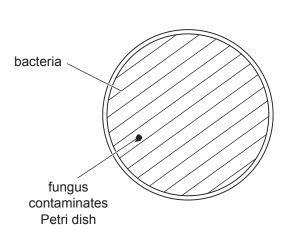
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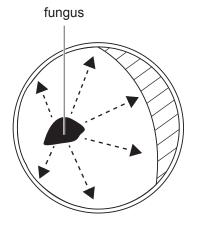
The swans feed on plants, insects and water snails from the bottom	
of the lake. Using only the information provided, explain fully one way	y
the swans are adapted for feeding.	

[2]

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

Examiner Only		
Marks	Remark	





Two days later

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(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:

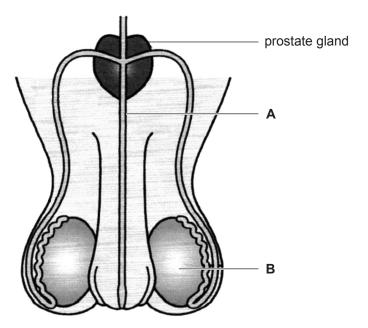
Pasteur	Wilson	Fleming	
			[1]

(iii) Name the antibiotic developed from this fungus.

	[1]

(b)	The	shrooms are another type of fungus that are often used in cooking contain very little carbohydrate and fat but are rich in vitamins I minerals. Mushrooms also contain a large amount of water.	g.	Examine Marks	er Only Remark
	(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]		

(a) The diagram below shows the male reproductive system.



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(i)	Name th	e structures	labelled.	A and B.
-----	---------	--------------	-----------	----------

A.	
В	
D.	

[2]

Examiner Only

- (ii) On the diagram, mark with an **X** a structure that is cut during a vasectomy. [1]
- (iii) What is the function of the prostate gland?

Choose from:

makes sperm : feeds sperm : stores urine

______[1]

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

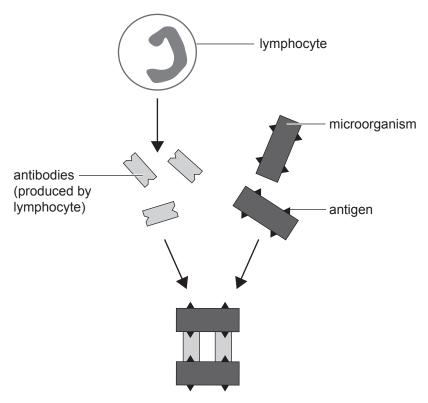
Examiner Only		
Marks	Remark	

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 expla antibodies fight infection.	in how
		[3]
(ii)	Another type of white blood cell also fights infection by phagocytosis. Describe the process of 'phagocytosis'.	
		[2]

	In 1990 about 90% of children were vaccinated In 1998 some research suggested that there was a link between the MMR vaccination and autism This caused the percentage of children vaccinated to fall by approximately half From 2005 the numbers have	
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	children vaccinated to fall by approximately half From 2005 the numbers have	
	From 2005 the numbers have	
	returned to the 1990 level as the vaccination was proved to be safe	
_		
_	[2]	
	How does the information suggest that not all parents are convinced that the MMR vaccination is safe today?	
_	[1]	
Name	e the type of immunity produced by vaccinations.	
	[1]	

(b) The following flow chart outlines how the number of children being

Examiner Only

7	(a)	una colo	inism is an inherited condition in which affected individuals are able to make the skin pigment melanin. The melanin gives skin bur, but more importantly, helps protect against the Sun's harm rays.		Examiner O Marks Re	Only emark
		Alb				
		(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 strong sunlight.	of		
				[2]		

The	e allele that cau	ses albir	nism is r	ecessive	e to the normal allele.			ner Only
(i)					show the offspring of a terozygous for albinism		Marks	Remark
	Use the symbol	ols: A = r	normal a	llele; a =	= albino allele			
				а				
		A	AA					
						[2]		
(ii)	Give the geno	type that	t causes	albinisr	n.			
					_	[1]		
(iii)	From the gene having albinism		am, wha	at is the	probability of a child not			
					_	[1]		

(b)

- 8 (a) The diagram below shows a leaf from a plant in darkness.
 - (i) Complete the diagram by naming the gases that enter (A) and leave (B) the leaf during **darkness**.

A	leaf
	B

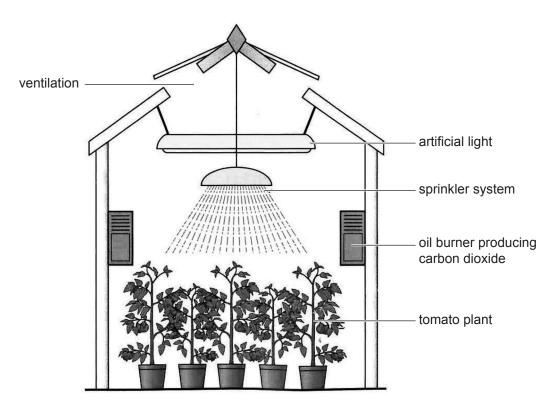
[1]

Examiner Only

(ii) Name the process that causes this gas exchange.

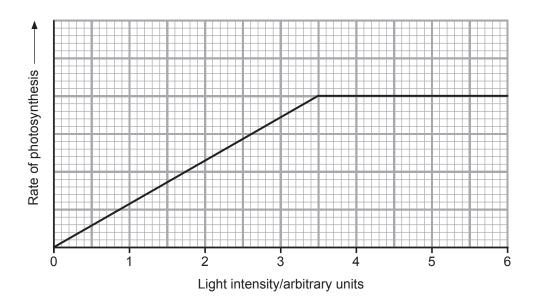
_____ [1]

(b) The diagram below shows tomato plants growing in a glasshouse.



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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]

(a)	Describe how you could investigate the effect of planting density (the number of seedlings in a pot) on plant growth.		Marks	Ren
	Your answer should also include:			
	 two things that make the results valid (fair test) a description and explanation of the results you would expect. 			
	In this question you will be assessed on your written communication skills including the use of specialist scientific terms.			
		[6]		
(b)	The grey squirrel is a competitive invasive species.	[6]		
(b)	The grey squirrel is a competitive invasive species. (i) Name one other competitive invasive species.	[6]		
(b)		[1]		
(b)		[1]		

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