



General Certificate of Secondary Education
2014

Double Award Science: Biology

Unit B2

Foundation Tier

[GSD41]

FRIDAY 6 JUNE 2014, AFTERNOON

**MARK
SCHEME**

General Marking Instructions

Introduction

Mark schemes are published to assist teachers and students in their preparation for examinations. Through the mark schemes teachers and students will be able to see what examiners are looking for in response to questions and exactly where the marks have been awarded. The publishing of the mark schemes may help to show that examiners are not concerned about finding out what a student does not know but rather with rewarding students for what they do know.

The purpose of Mark Schemes

Examination papers are set and revised by teams of examiners and revisers appointed by the Council. The teams of examiners and revisers include experienced teachers who are familiar with the level and standards expected of students in schools and colleges.

The job of the examiners is to set the questions and the mark schemes; and the job of the revisers is to review the questions and mark schemes commenting on a large range of issues about which they must be satisfied before the question papers and mark schemes are finalised.

The questions and the mark schemes are developed in association with each other so that the issues of differentiation and positive achievement can be addressed right from the start. Mark schemes, therefore, are regarded as part of an integral process which begins with the setting of questions and ends with the marking of the examination.

The main purpose of the mark scheme is to provide a uniform basis for the marking process so that all the markers are following exactly the same instructions and making the same judgements in so far as this is possible. Before marking begins a standardising meeting is held where all the markers are briefed using the mark scheme and samples of the students' work in the form of scripts. Consideration is also given at this stage to any comments on the operational papers received from teachers and their organisations. During this meeting, and up to and including the end of the marking, there is provision for amendments to be made to the mark scheme. What is published represents this final form of the mark scheme.

It is important to recognise that in some cases there may well be other correct responses which are equally acceptable to those published: the mark scheme can only cover those responses which emerged in the examination. There may also be instances where certain judgements may have to be left to the experience of the examiner, for example, where there is no absolute correct response – all teachers will be familiar with making such judgements.

			AVAILABLE MARKS
1	<p>(a) Bacteria – Salmonella; Virus – Mumps; Fungus – Athlete’s foot All 3 correct = [2] 1 correct = [1]</p> <p>(b) Salmonella;</p> <p>(c) Bacteria;</p> <p>(d) Wear flip-flops/dry feet properly;</p>	<p>[2]</p> <p>[1]</p> <p>[1]</p> <p>[1]</p>	5
2	<p>(a) Tar; Nicotine; Carbon monoxide;</p> <p>(b) Any two from: Tar</p> <ul style="list-style-type: none"> • lung cancer/throat cancer/mouth cancer/tongue cancer • emphysema • bronchitis <p>or Nicotine</p> <ul style="list-style-type: none"> • addiction • irregular/faster heart beat; affected heart rate <p>or Carbon monoxide</p> <ul style="list-style-type: none"> • combines with red blood cells • less oxygen carried • less respiration <p>No marks for substance on its own Harmful effects must agree with substance</p> <p>(c) Individual: memory loss/addiction/mental health problems. Society: family breakup/crime/cost of treatment/time off work.</p>	<p>[3]</p> <p>[2]</p> <p>[2]</p>	7
3	<p>(a) (i) Plots correct; bars Scaling of y-axis correct; Label of y-axis;</p> <p>(ii) 160–164.9</p> <p>(iii) Genes; Environment;</p> <p>(b) (i) 40%;</p> <p>(ii) $\frac{40}{100} \times 20$; 8; (or 8 on own for [2])</p> <p>(c) Discontinuous;</p>	<p>[4]</p> <p>[1]</p> <p>[2]</p> <p>[1]</p> <p>[2]</p> <p>[1]</p>	11

			AVAILABLE MARKS		
4	(a) (i)	In oviduct;	[1]		
	(ii)	Fertilisation;	[1]		
	(iii)	Mitosis;	[1]		
	(iv)	Uterus (lining);	[1]		
	(v)	Any two from: • Oxygen • Antibodies • Glucose • Amino acids • Vitamins • Minerals • Hormones (Accept named dissolved nutrients but not nutrients on its own)	[2]		
	(vi)	Any one from: Brain damage/foetal alcohol syndrome/low birth weight/blindness/ visual problems Learning difficulties	[1]		
	(vii)	Increase price of alcohol/more education about alcohol/targeted advertising;	[1]		
	(b)	Oestrogen; Ovaries; Any two from: • Breast (development) • growth of pubic hair • (onset of) menstruation • hips widen	[4]		12
5	(a)	Plasmolysed;	[1]		
	(b)	Scale (same size); Membrane against cell wall <u>and labelled</u> ; Cell wall <u>correctly labelled</u> ; Vacuole drawn larger;	[4]		5

			AVAILABLE MARKS		
6	(a)	(i) Natural acquired;	[1]	7	
		(ii) Artificial passive;	[1]		
	(b)	Any two from:			
		• Antibiotics won't be effective/treatment of viral diseases difficult			
		• Might not be able to get good medical care			
		• Hard to avoid being bitten			
		• To provide him with immunity/to get high levels of antibodies	[2]		
(c)	(i)	3.8;	[1]		
		Higher percentage of the population in NI were vaccinated. Bigger population in England/converse;	[1]		
	(iii)	Jenner;	[1]		
7	(a)	(i) Correctly labelled;	[1]	12	
		(ii) To prevent backflow of blood;	[1]		
	(iii)	Any two from:			
		• Higher pressure			
		• away from heart			
		• flows in veins/pulses in arteries			
			• higher velocity		[2]
	(b)	(i)	Correctly labelled;		[2]
<u>Double circulation</u> ;			[1]		
(iii)		Clockwise order			
		Right ventricle; Pulmonary vein; Left atrium; Aorta;	[4]		
(iv)	Hepatic artery; (do not accept hepatic on own)	[1]			

8 (a) (i) 2 minutes; [1]

(ii) Any **three** from:

- Group A lower throughout/or average pulse is lower
- Group A lower resting pulse (rate)
- Group A faster increase/rises faster
- Group A lower peak pulse (rate)
- Group A returns to normal faster
- Group A has bigger increase

[3]

Allow converse if stated Group B

(iii) Any **two** from:

- Increased heart volume/more blood pumped (per beat)
- Stronger heart muscle
- Reduced risk of heart attack/stroke

[2]

(b) **Indicative content**

- Cholesterol/fat laid down in walls
- Of **coronary** arteries
- Reducing blood flow
- Less glucose/oxygen available
- For respiration
- Heart/muscle/cells die
- So heart can't contract

[6]

Response	Mark
Candidates must use appropriate specialist terms throughout to describe how a heart attack occurs (using at least five of the above points). They use good spelling, punctuation and grammar and form and style are of a high standard.	[5]–[6]
Candidates use some appropriate specialist terms to describe how a heart attack occurs (using three or four of the above points). They use satisfactory spelling, punctuation and grammar and the form and style are of a satisfactory standard.	[3]–[4]
Candidates describe how a heart attack occurs. However, the description is not presented in a logical sequence. They use limited spelling, punctuation and grammar and they have made little use of specialist terms.	[1]–[2]
Response not worthy of credit.	[0]

AVAILABLE
MARKS

12

		AVAILABLE MARKS									
9	(a) (i) As wind increases, the rate of transpiration increases;	[1]									
	(ii) As the temperature increases, the rate of transpiration increases; As the humidity increases, the rate of transpiration decreases;	[2]									
	(b) (i) To prevent water evaporation <u>from the pot/soil</u> ;	[1]									
	(ii) $(257.6 - 185.6)/\text{or } \div 24$ [1] or 3 g per hour	[2]									
	(iii) Less surface area/less stomata So less evaporation/diffusion of water	[2]									
	(iv) • Photosynthesis • Support • Transport (Any two)	[2]									
10	(a) (i) DNA;	[1]									
	(ii) Two nuclei or two cells drawn; Two chromosomes in each; Chromosomes identical to parents;	[3]									
(b) (i)	Punnett square; <table style="display: inline-table; vertical-align: middle; border-collapse: collapse;"> <tr> <td style="border-right: 1px solid black; border-bottom: 1px solid black; padding: 2px 5px;"></td> <td style="border-bottom: 1px solid black; padding: 2px 5px; text-align: center;">H</td> <td style="border-bottom: 1px solid black; padding: 2px 5px; text-align: center;">h</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 2px 5px; text-align: center;">h</td> <td style="padding: 2px 5px; text-align: center;">Hh</td> <td style="padding: 2px 5px; text-align: center;">hh</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 2px 5px; text-align: center;">h</td> <td style="padding: 2px 5px; text-align: center;">Hh</td> <td style="padding: 2px 5px; text-align: center;">hh</td> </tr> </table> Correct cross;		H	h	h	Hh	hh	h	Hh	hh	[4]
	H	h									
h	Hh	hh									
h	Hh	hh									
	(ii) 50:50 or 1:1/ 2:2;	[1]									
Total		90									