



*Rewarding Learning*

**General Certificate of Secondary Education  
2014**

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**GCSE Biology**

Unit 2

Foundation Tier

**[GBY21]**

**MONDAY 16 JUNE, MORNING**

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**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	(a) (i)	Days 1–5 shaded;	[1]	4
	(ii)	Lining of uterus breaks down (and passes out through vagina);	[1]	
	(b)	Eggs released (/ovulation) on day 14; fertilisation can occur/sperm can still be alive on day 14;	[2]	
2	(a)	Nicotine – causes addiction; Carbon monoxide – less oxygen carried in blood; Tar – causes lung cancer; (3 for [2], 2 for [1])	[2]	4
	(b)	Any <b>two</b> from: Ban smoking in public places/indoors; Make packaging plain/prevent display of cigarettes in shops; Education/public health intervention; Increase price of cigarettes;	[2]	
3		Spontaneous generation; Pasteur; Swan neck; Microorganisms; 72;	[5]	5
4	(a)	Accurate plots; Line drawn;	[2] [1]	6
	(b)	4–8;	[1]	
	(c) (i)	Growth rate <b>increases</b> ;	[1]	
	(ii)	Puberty/hormones;	[1]	
5	(a)	Arrow drawn in A ↑;	[1]	6
	(b)	B – Aorta;	[1]	
		C – Left ventricle;	[1]	
		D – Right atrium;	[1]	
(c)	Prevent backflow; Into right atrium/maintain unidirectional flow of blood into ventricle/C;	[1] [1]		

			AVAILABLE MARKS	
6	(a)	(i) F in either oviduct;	[1]	8
		(ii) M in uterus	[1]	
		(iii) Produce ova (eggs)/oestrogen	[1]	
	(b)	(i) A – Placenta; B – Umbilical cord; C – Amniotic sac/fluid/amnion;	[1] [1] [1]	
		(ii) Small size of foetus/not fully grown; Limbs/head not fully formed; (Accept: reference to any organ not fully developed)	[2]	
7	(a)	(Different) form of same(/a) gene;	[1]	6
	(b)	rr;	[1]	
	(c)	Not shown in the first generation (phenotype);	[1]	
	(d)	(i) RR, Rr; Rr, rr;	[2]	
		(ii) Circle drawn around RR	[1]	
8	(a)	(i) Prevents contamination/other microorganisms entering;	[1]	5
		(ii) No eating/drinking in lab Wipe down benches with disinfectant Seal Petri dishes Use sterile loops/apparatus Flame neck of bottle Sterilise equipment after use Wash hands afterwards (Any <b>one</b> )	[1]	
	(b)	Pathogens (described) which could harm humans will not grow;	[1]	
	(c)	(i) C;		
		(ii) largest clear area (of bacteria killed);	[2]	
9	(a)	(i) Any <b>two</b> from: Evaporates (from mesophyll cell); diffuses out; through stomata; transpiration;	[2]	
		(ii) Temperature; light; wind; humidity; (Any <b>two</b> )	[2]	

- (b) (i)  $(2.0 - 1.6) \div 2.0 \times 100$ ; 20%; [2]
- (ii) Leaves different masses at start; [1]
- (iii) Leaf 1 is a control/for comparison; [1]
- (iv) More **stomata** on lower surface/vaseline blocks **stomata**; [1]

10 (a) Abnormal cell division; [1]

(b) **Indicative content:**

- Maximum [2] { 1 Cancer cell larger;  
2 Cancer cell larger nucleus;  
3 Cancer cell irregular shape;
- Maximum [2] { 4 Not in a capsule;  
5 Spreading in blood/lymph;  
6 Spread around the body/into other tissues;
- Maximum [2] { 7 Tumour has its own blood supply;  
8 To provide cells with food/energy/oxygen;  
9 (Cancer cells) continue to divide/grow;

Response	Mark
Candidates <b>must use appropriate, specialist terms</b> throughout <b>using at least FIVE of the above points</b> . They use good spelling, punctuation and grammar and the form and style are of a <b>high standard</b> .	[5]–[6]
Candidates use <b>some appropriate, specialist terms</b> throughout <b>using at least THREE of the above points</b> . They use <b>satisfactory</b> spelling, punctuation and grammar and the form and style are of a <b>satisfactory</b> standard.	[3]–[4]
Candidates make <b>little use of specialist terms</b> throughout to give one of the above points. The spelling, punctuation and grammar, form and style are of a <b>limited</b> standard.	[1]–[2]
Response not worthy of credit.	[0]

- (c) (i) Number of women diagnosed **falls** after screening was introduced in 1988; [1]
- (ii) Early detection; Faster/more effective treatment; [2]
- (iii) Surgery; radiotherapy; chemotherapy; [3]
- (d) Any **two** from  
Protection against virus;  
before having sexual relationship;  
Only girls get cervical cancer; [2]

AVAILABLE  
MARKS

9

[6]

15

		AVAILABLE MARKS
<b>11 (a)</b>	Similarity – Both have genetic material;	[1]
	Difference – (Any <b>one</b> from): TB has double stranded genetic material, HIV single stranded; TB has cell wall, HIV has protein layers; TB has plasmids, HIV does not;	[1]
	<b>(b)</b> (Spread in saliva) by <b>coughing/sneezing</b> ;	[1]
	<b>(c)</b> Spread – Sexual <b>intercourse</b> /bodily fluids exchanged/blood to blood contact (described); Prevented – Condom/abstinence/screening blood;	[1] [1]
		5
<b>12 (a)</b>	<b>(i)</b> Similarity – Death from CHD increases with age; Difference – More men than women die from CHD;	[1] [1]
	<b>(ii)</b> More women in population;	[1]
	<b>(b)</b> Don't smoke cigarettes; exercise regularly; avoid stress; Reduce salt/fat/cholesterol/alcohol; (Any <b>two</b> )	[2]
		5
<b>13 (a)</b>	Quadrats/Random sampling; Weigh fruits; Record on table/tally chart; Any <b>three</b>	[3]
	<b>(b) (i)</b> <b>Continuous</b> variation;	[1]
	<b>(ii)</b> Histogram	[1]
	<b>(c)</b> Most strawberries between <b>10.0 and 11.9</b> ; Data range described; Any <b>one</b>	[1]
		6
<b>14 (a)</b>	<b>(i)</b> Cell/vacuole/nuclear <b>membrane</b> ;	[1]
	<b>(ii)</b> Lets some/certain/small substances pass through;	[1]
	<b>(b) (i)</b> Smaller vacuole; cell membrane away from cell wall; Nucleus correct shape and position;	[3]
	<b>(ii)</b> Plasmolysed/plasmolysis;	[1]
	<b>Total</b>	<b>90</b>