



Rewarding Learning

General Certificate of Secondary Education

Biology

Unit 2

Foundation Tier

[GBL21]

Assessment

MARK SCHEME

General Marking Instructions

The main purpose of the mark scheme is to ensure that each question is marked accurately, consistently and fairly.

Mark schemes are not intended to be totally prescriptive. No mark scheme can cover all the responses which students may produce. In the event of unanticipated answers, teachers and lecturers are expected to use their professional judgement to assess the validity of answers.

Mark Scheme Annotation

- The use of a solidus (/) denotes alternative answers which can be awarded within the same question (or marking point in a question worth more than one mark).
- The use of a semi-colon (;) denotes separate marking points. These are particularly relevant when separating the different marking points in a question worth more than one mark.
- Part of an answer within brackets indicates that this part is not essential to gain credit – the bracketed section is usually to set context or for the purpose of completeness.
- Some answers are shown as 'Any **two** from' (or any number between two and six). This means that any two (or other specified number) answers from the bullet-pointed list can be credited in this question or question part.

Marking Calculations

Full marks are normally awarded for the correct answer – irrespective of whether working out has been shown (even when asked to show working out.) The principle of 'error carried forward' (ECF) usually applies in that if a student makes a mistake in the first part of a three-mark, three-stage calculation then the final two marks can be awarded if the second and third stage processes are carried out correctly. The same principle applies to a mistake at any stage in a calculation.

Marking QWC question

See guidance in the mark scheme at the QWC question and also the section in the subject-specific guidance.

			AVAILABLE MARKS		
1	(a)	(i) Red blood cell;	[1]	6	
		(ii) To transport/carry oxygen/O ₂ ;	[1]		
	(b)	(i) Biconcave (disc);	[1]		
		(ii) Increases the surface area;	[1]		
(c) No nucleus/haemoglobin; more space to carry oxygen/absorb oxygen;	[2]				
2	(a)	A Oviduct;	[3]	5	
		B Uterus;			
		C Vagina;			
(b) Line labelled X drawn to one or both ovaries;	[1]				
(c) Oestrogen;	[1]				
3	(a)	Arrow from spongy mesophyll cell; out from air space through stoma;	[2]	5	
		(b) Prevents evaporation of water/water-proof;	[1]		
	(c) Support/transport/photosynthesis;	[2]			
4	(a)	(i) A – lungs; B – liver; C – kidney;	[3]	6	
			(ii) Towards the liver/organ B;		[1]
			(iii) Line drawn from lungs to the left atrium;		[1]
	(b) Shade right atrium and right ventricle;	[1]			
5	(a)	Step 1: nuclear membrane disappears; Step 2: chromosomes duplicate;	[2]	6	
		(ii) 2 chromosomes in each cell; exactly the same as the parent cell;	[2]		
	(b) 4; haploid;	[2]			

			AVAILABLE MARKS	
6	(a)	(i) Fungus;	[1]	5
		(ii) Antibiotic;	[1]	
	(b)	(i) No bacterial colonies growing near Penicillium/fungus;	[1]	
(ii) Colonies growing further away are bigger/accept converse;		[1]		
(iii) Diffusion;		[1]		
7	(a)	(i) Vaccination; food poisoning; cook food thoroughly; sexual intercourse; fungus;	[5]	
		(ii) Physical barrier/prevents sperm entering female/described;	[1]	
	(b) Cost to NHS for treatment/care;	[1]		
8	(a) Any two from: Skin; mucous membranes; blood clotting;	[2]	9	
	(b) Phagocyte; the white blood cell engulfs microorganism; the microorganism is digested;	[3]		
	(c) Lymphocyte; produces antibodies; antibodies attach to antigens on microorganisms; causes clumping/reduces spread of the microorganisms;	[4]		

- 9 (a) Student A
 resting heart rate **lowest**;
 60 vs 70 and 85;
lowest heart rate during exercise;
 110 vs 125 and 145;
 student A has **quickest** recovery time;
 18 mins compared to 25 and 30;

[6]

Band	Response	Mark
A	Candidates must use appropriate, specialist terms throughout to describe and explain their conclusions using at least 5 of the points . They use good spelling, punctuation and grammar and the form and style are of a high standard.	[5]–[6]
B	Candidates use some appropriate, specialist terms throughout to describe and explain their conclusions using at least 3 of the points . They use satisfactory spelling, punctuation and grammar and the form and style are of a satisfactory standard.	[3]–[4]
C	Candidates make little use of specialist terms throughout to describe and explain their conclusions using at least 1 of the points . The spelling, punctuation and grammar, form and style are of a limited standard.	[1]–[2]
D	Response not worthy of credit.	[0]

- (b) (i) Increased (blood flow); [1]

- (ii) More oxygen/glucose provided to muscles;
 for more respiration/energy produced; [2]

- (c) Any **one** from:
 Sweating; faster breathing rate/deeper breathing; higher body temperature; [1]

AVAILABLE
 MARKS

10

			AVAILABLE MARKS
10 (a) (i)	Recessive allele (a) in both parental genotypes (gametes) in Punnett square; AA, Aa; Aa, aa;	[3]	8
(ii)	aa;	[1]	
(iii)	$\frac{1}{2}$ / 50%;	[1]	
(b) (i)	Amniocentesis;	[1]	
(ii)	Avoid harming the baby with syringe;	[1]	
(iii)	Miscarriage;	[1]	
11 (a)	X = testis;	[1]	6
(b) (i)	Vasectomy/male sterilisation;	[1]	
(ii)	Any two from: Sperm tube is cut; to prevent sperm entering penis/travelling along sperm duct/entering female; prevents fertilisation ;	[2]	
(iii)	Reliable/permanent; difficult to reverse;	[2]	
12 (a)	7889 – 6346 = 1543; $\frac{1543}{6346} \times 100 = 24.31$; 24.3;	[3]	7
(b)	Farmer chooses a cow with a large milk yield; breeds it; repeats over many generations;	[3]	
(c)	Diet/food eaten by cow;	[1]	

		AVAILABLE MARKS
13 (a) (i)	The artery causing a stroke has (fatty) deposit/described; the artery causing a stroke has a narrower lumen/artery blocked/ described;	[2]
(ii)	Any one from: Reduces blood flow to brain cells; brain cells dies;	[1]
(b) (i)	Any two from: Wire mesh/stent containing a balloon is inserted into the artery; balloon is inflated; balloon is deflated and removed;	[2]
(ii)	Any two from: Wire mesh/stent remains open; lumen widens/increased blood flow;	[2]
(c)	Speech;	[1]
(d)	Any two from: Don't smoke; reduce fat intake; take regular exercise; take statins/aspirin; reduce stress	[2]
Total		10
		90