



**General Certificate of Secondary Education
2018**

Biology

Unit 2

Foundation Tier

[GBY21]

MONDAY 18 JUNE, MORNING

**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	Virus; [1] Droplets; [1] Coughing; [1] Vaccine; [1]	[4]	4
2	(a) XY; [1] XY, XX, XY; Three correct = [2], two correct = [1]	[3]	
	(b) $\frac{1}{2}$;	[1]	4
3	(a) Transferred by/during sexual intercourse;	[1]	
	(b) Males – 1100; [1] Females – 1800; [1]	[2]	
	(c) Males number of cases decline much slower than females/number of females less than males;	[1]	
	(d) Condom/abstinence;	[1]	5
4	(a) Any three from: Flame neck of culture bottle; Flame/use sterile loop; Use sterile agar plate; Swab benches; Inoculate under/close to Bunsen burner flame; Only lift lid at angle; Personal hygiene/wash hands;	[3]	
	(b) Chemical which kills bacteria;	[1]	
	(c) (i) Heading – Diameter of clear area/mm; [1] Data per row recorded correctly; [2]	[3]	
	(ii) antibiotic Z; [1] Largest clear area/most bacteria killed; [1]	[2]	9
5	(a) Potometer;	[1]	
	(b) Distance bubble moves; [1] Time; [1]	[2]	
	(c) No reservoir/syringe; [1] To refill the water/bring the bubble back to zero; [1]	[2]	5

			AVAILABLE MARKS	
6	(a) (i)	A – Red blood cell; [1] B – Platelet; [1] C – Fibrin; [1]	[3]	6
	(b)	Fibrin/blood protein C forms a mesh; Red blood cells trapped/clumped together; Cut sealed/clot;	[3]	
7	(a)	Same flask and broth; [1] No swan neck; [1]	[2]	5
	(b)	Sterilise/kill microbes;	[1]	
	(c)	Broth will be cloudy; [1] The microbes caught in the swan neck will have entered; [1]	[2]	
8	(a)	Accurately plotted bars [$\times 2$]; Bars labelled; [1] Spaces between bars; [1]	[4]	9
	(b) (i)	10% of 200; [1] = 20 20×2 ; [1] = 40; [1]	[3]	
	(ii)	Any two from: 6 units short; Short of blood for 3 patients; Can't cancel emergency surgery;	[2]	
9	(a)	Length of DNA; [1] Coding for/controlling characteristics; [1]	[2]	10
	(b)	h, h; [1] mark as column Hh, hh [1] } mark as rows. Hh, hh; [1] }	[3]	
	(c)	Punnett square;	[1]	
	(d)	Circle round hh;	[1]	
	(e)	Smooth hair; [1] Wire hair; [1]	[2]	
	(f)	Small sample size;	[1]	

			AVAILABLE MARKS		
10	(a)	A – Aorta; [1] B – left ventricle; [1] C – vena cava; [1] D – right atrium; [1]	[4]	12	
	(b) (i)	160 – 60 / 100; [1] 100 ÷ 10; [1] = 10 (beats per minute); [1]	[3]		
	(ii)	Any two from: Lower resting heart rate; Lower heart rate during exercise; Faster recovery rate;	[2]		
	(iii)	Increased strength (of heart muscle);	[1]		
	(iv)	Heart has increased cardiac output/can pump more blood each contraction; [1] Fewer beats/contractions required (for same amount of exercise); [1]	[2]		
11	(a) (i)	Valve;	[1]		5
	(ii)	Stops backflow; [1] Under low pressure; [1]	[2]		
	(b)	→	[1]		
(c)	Capillary wall is thinner/only one cell thick; (allow converse)	[1]			
12	(a)	50th percentile;	[1]		
	(b)	C; [1] Average mass = 1525 (±25); [1]	[2]		
	(c)	Length; [1] Cell number; [1]	[2]		
13	(a)	Combines with haemoglobin/reduces oxygen being carried; [1] Nicotine; [1]	[2]	5	
	(b) (i)	Emphysema;	[1]		
	(ii)	Alveoli breakdown/described; [1] Less surface area; [1] or Bronchiole narrower [1]; less oxygen gets into alveoli [1]	[2]		

14 Indicative Content

1. 28 days long;
2. Menstruation occurs in correct sequence;
3. [Menstruation] **uterus lining** breaks down/builds up;
4. Day 14 ovulation/egg released from ovary;
5. Fertilisation fusion of egg and sperm, nuclei/**in oviduct**/zygote;
6. Implantation/**forms** placenta;

Band	Response	Mark
A	Candidates must use appropriate, specialist terms throughout to describe and explain their conclusions using at least 6 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 4 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 2 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]

[6]

Total

AVAILABLE MARKS
6
90