



General Certificate of Secondary Education
January 2019

GCSE Biology

Unit 2

Foundation Tier

[GBY21]

TUESDAY 22 JANUARY, 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	(a)	(i) A – Nucleus; [1] B – Tail; [1]	[2]	8
		(ii) Long/flexible for swimming;	[1]	
	(iii) Testes;	[1]		
	(iv) Testosterone;	[1]		
	(b)	✓, ; [1] ✓, ✓; [1] , ✓; [1]	[3]	
2	(a)	(i) 8;	[1]	6
		(ii) Appropriate y-axis scale; [1] y-axis label Number of pupils; [1] Accurate plots of bars 24 and 8; [1]	[3]	
	(b)	(i) Continuous;	[1]	
	(ii) Height/appropriate alternative;	[1]		
3	(a)	(i) Menstruation:	[1]	5
		(ii) Any two from: Breakdown of uterus lining ; [1] Unfertilized egg comes away; [1] Passed out (through vagina); [1]	[2]	
	(b)	At day 14/egg is released/ or ovulation; [1] Sperm can survive for several days; [1] /Sperm present fertilisation can occur	[2]	
4	(a)	(i) Tar;	[1]	6
		(ii) Combines with (haemoglobin)/red blood cells; [1] Reduces amount of oxygen carried in the blood described; [1]	[2]	
	(b)	(i) Breathing in other peoples' smoke;	[1]	
		(ii) Nicotine/addictive;	[1]	
		(iii) Freedom of choice/loss of revenue;	[1]	

			AVAILABLE MARKS
5	(a) C; [1] Largest area of no bacterial growth around disc/most bacteria killed; [1]	[2]	
	(b) (i) Any two from: Bacteria can still grow; Below body temperature; No pathogens harmful to humans will grow/grow slower;	[2]	
	(ii) Any one from: Use sterile apparatus; sterilize loops/flame neck of bottle; work beside Bunsen burner; Seal Petri dishes when inoculated;	[1]	5
6	(a) (i) Any two from: Surgery; [1] Oviducts/Fallopian tube; [1] Cut; [1]	[2]	
	(ii) major operation/surgery required/difficult to reverse;	[1]	
	(b) Prevents egg moving through oviduct; [1] Prevents fertilisation; [1]	[2]	
	(c) (Contraceptive) pill;	[1]	6
7	(a) A – Aorta; [1] B – Atrium [left]; [1] C – Ventricle [left]; [1]	[3]	
	(b) Arrow point up in the vessel X;	[1]	
	(c) D is thicker than E / thicker on the left-hand side; [1] Has to pump further/all round the body/at higher pressure; [1]	[2]	
	(d) (i) 20 (minutes);	[1]	
	(ii) Peter;	[1]	
	Any two from: need comparison Faster/shorter recovery time; Lower resting /starting rate; Lower maximum rate/ only reaches 100;	[2]	10

			AVAILABLE MARKS	
8	(a)	Different form of a gene/alternative form of a gene;	[1]	8
	(b) (i)	Female cat – bb; [1] Sperm – B; [1] b; [1]	[3]	
	(ii)	The female cat is homozygous recessive;	[1]	
	(iii)	Row – B, Bb, Bb; [1] Row – b, bb, bb; [1]	[2]	
	(iv)	½ / half/50%;	[1]	
9	(a) (i)	Cells are genetically identical to the parent cells;	[1]	5
	(ii)	Duplication of chromosomes/DNA replicates;	[1]	
	(b) (i)	Heat in an oven; [1] Until constant mass/until all water removed; [1]	[2]	
	(ii)	Plant has to be killed;	[1]	
10	(a)	Any three from: Primary tumour not encapsulated; [1] Cancer cells enter blood; [1] Spread to other tissues; [1] New tumour develops; [1]	[3]	
	(b)	Surgery; [1] Chemotherapy; [1] Radiotherapy; [1]	[3]	
	(c) (i)	1770;	[1]	
	(ii)	Skin;	[1]	
	(iii)	HPV/Human papilloma virus;	[1]	
	(iv)	Early detection; [1] Means tumour can be removed/treated before it spreads; [1]	[2]	
11	(a) (i)	Towards the heart;	[1]	6
	(ii)	Valves; [1] Prevent blood from moving backwards/away from the heart [1]	[2]	
	(b)	Artery – Thicker layer A; [1] More elastic/muscle fibres; [1] Withstand pressure; [1] Accept converse for vein;	[3]	

- 12 (a) Transpiration; [1]
- (b) (i) Use a fan/hairdryer; [1]
- (ii) $72 \div 24$; [1]
= 3; [1] [2]
- (iii) Any **two** from:
More evaporation/diffusion; [1]
Greater gradient for water loss/more water blown away from leaf/
described; [1]
More energy for water loss; [1] [2]
- (c) Temperature/humidity/light; [1]
- 13 (a) Plasmolysed; [1]
- (b) **Indicative Content**
1. Water enters the cells;
 2. Through selectively/partially permeable membrane;
 3. By osmosis;
 4. Water moves from high water concentration to low water concentration/
from dilute solution to a concentrated solution;
 5. Vacuole/cytoplasm increases in volume;
 6. Cytoplasm pushes against cell wall;
 7. Cell wall resists expansion;
 8. Causes turgor pressure/cell becomes turgid;

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]

[6]

Total

**AVAILABLE
MARKS**

7

7

90