New Specification

Rewarding Learning

General Certificate of Secondary Education
2018

Single Award Science: Biology

Unit 1

Higher Tier

[GSA12]

WEDNESDAY 21 FEBRUARY 2018, 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)	Meal taken/or named example of food/drink [1] containing carbohydrate/named carbohydrate [1] [2]	
		(ii)	Glycogen [1] liver [1] [2]	
	(b)	(i)	Any **two** from: • cost of equipment to monitor blood glucose levels • many people affected/can have diabetes for a long period of time • treatment of complications [2]	
		(ii)	Eye damage/blindness/kidney failure/heart disease/strokes/amputation [1]	
		(iii)	Type 1 occurs early in life/type 1 not linked to lifestyle/type 1 treated by insulin/with type 1 insulin not produced (or converse) [1]	8
2	(a)	(i)	Layer A is closer to the light [1] has more chloroplasts [1] [2]	
		(ii)	Carbon dioxide [1]	
	(b)		Glucose/sugar/starch [1] oxygen [1] [2]	5
3	(a)		Droplet infection/through coughing/sneezing [1]	
	(b)	(i)	Less able to fight infection/are weaker [1]	
		(ii)	Causes less harm [1]	
	(c)	(i)	Any **two** from: • more antibodies produced • produced at a faster rate • level off more slowly/last longer [2]	
		(ii)	Memory lymphocytes [1]	6

AVAILABLE MARKS

4 Indicative content

- (genetic structures) that occur in pairs
- in the nucleus
- genes are small sections
- that control features/characteristics of individuals
- formed of DNA
- double helix structure
- Down's Syndrome is caused by extra chromosome
- 46 normal number/47 in Down's Syndrome

Band	Response	Mark
A	Candidates must use appropriate specialist terms throughout to describe the structure and function of chromosomes using **six to eight** of the points above, in a logical sequence. 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 to describe the structure and function of chromosomes using **four or five** of the points above, in a logical sequence. They use satisfactory spelling, punctuation and grammar and the form and style are of a satisfactory standard.	[3]–[4]
C	Candidates partially describe the structure and/or function of chromosomes using **one to three** of the above points. However, these are not presented in a logical sequence. They use limited spelling, punctuation and grammar and have made limited use of specialist terms. The form and style are of a limited standard.	[1]–[2]
D	Response not worthy of credit.	[0]

[6] 6

5 (a) A site which had housing previously [1]

(b) (i) 2005 – 2010 [1]

(ii) 120 ÷ 20 × 100 [1]
600 [1] [2]

(iii) Helps protect forests/land not previously used for building [1]
that are habitat-rich/contain many species [1] [2]

(c) Protects rare species/habitats [1] 7

				AVAILABLE MARKS
6	(a)	ovary [1] oviduct [1]	[2]	
	(b) (i)	Zygote	[1]	
	(ii)	Have half the normal number of chromosomes	[1]	
	(iii)	4	[1]	5
7	(a) (i)	Receptors	[1]	
	(ii)	Spinal cord	[1]	
	(b) (i)	Tt	[1]	
	(ii)	Gametes [1] offspring [1]	[2]	
	(iii)	1 in 4/25%/1 : 3	[1]	6
8	(a)	$6H_2O$ [1] $6CO_2$ [1]	[2]	
	(b) (i)	60 ÷ 3 [1] 20 [1]	[2]	
	(ii)	Any **three** from: • more blood to body/muscles • more oxygen/glucose • for respiration • more energy for muscles/exercise	[3]	
	(c)	Stronger heart/increased cardiac output (therefore fewer beats required)	[1]	8
9	(a) (i)	Number of species decrease until 2 [1] and level off over time [1] (number of species decrease and level off over time = 1)	[2]	
	(ii)	Year 3/4	[1]	
	(iii)	Different species grow/are present at different times	[1]	
	(b)	With new lawnmower the shorter growing species could survive [1] taller species unable to survive on lawn [1] proportion of shorter species increase over time (or converse) [1]	[3]	
	(c)	Endangered species have very low numbers (but still exist) [1] extinct species no longer exist/no longer have living members [1]	[2]	9
			Total	**60**