Rewarding Learning

General Certificate of Secondary Education
2017–2018

Double Award Science: Biology

Unit B1

Foundation Tier

[GSD11]

WEDNESDAY 8 NOVEMBER 2017, 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

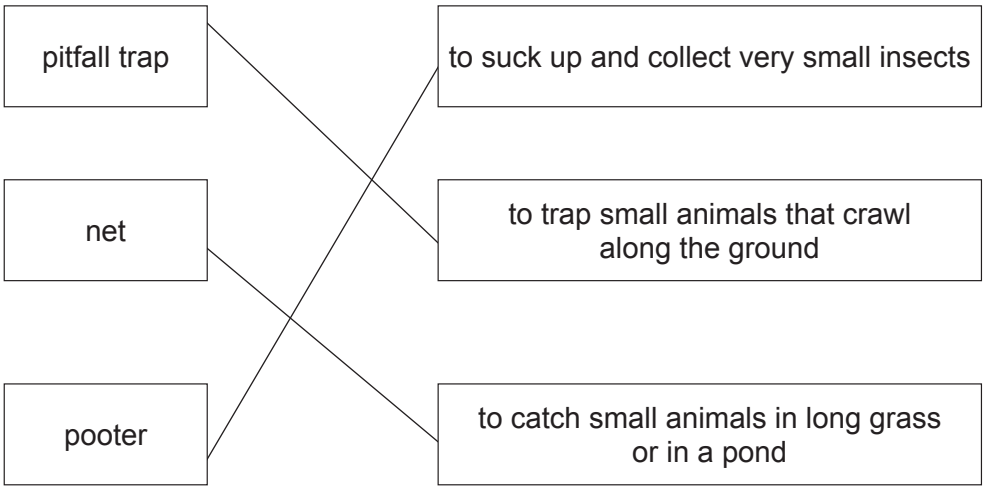
Examination papers are set and revised by teams of examiners and revisers appointed by the Council. The teams of examiners and revisers include experienced teachers who are familiar with the level and standards expected of students in schools and colleges.

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)	Any **two** from: roots; / if 3 answers and 1 wrong 1 mark stems; leaves; vascular tissue; seed (production with a) fruit/pollen [2]	
	(b)	Any **two** from: 3 pairs of legs/6 legs; 3 body parts/head, thorax and abdomen; 2 pairs of wings/4 wings; body temperature not constant; exoskeleton [2]	
	(c)	**Apparatus** / **Use**  2 or 3 correct = 2 marks 1 correct = 1 mark [2]	6
2	(a)	energy flow/energy transfer/eaten by/consumption/energy flow/what an animal feeds on [1]	
	(b) (i)	mark in order – oak tree smallest at the bottom; shape of other three correct; order other three correct – aphids then blue tits then sparrowhawks [3] word labels NOT numbers needed	
	(ii)	11 × 20; 220 (correct answer = 2) [2]	6
3	(a)	48 hours in a dark cupboard [1]	
	(b) (i)	blue black/black (not blue on its own) [1]	
	(ii)	no carbon dioxide/CO_2 removed/ CO_2 absorbed/solution to remove CO_2; no photosynthesis [2]	
	(c)	**increased** (oxygen)/high O_2/low to high O_2/more O_2; **decreased** (carbon dioxide)/low CO_2/high to low high CO_2/less CO_2 [2]	6

				AVAILABLE MARKS
4	(a)	oxygen/O_2; carbon dioxide/CO_2; water/H_2O; (either order) }	[3]	
	(b)	(i) similarity; energy needed decreases with age/all over 2100 per day; difference men need more energy than women/or converse;	[2]	
		(ii) 2800 – 2200; = 600	[2]	
	(c)	(i) activity/exercise don't overeat/balanced diet	[1]	
		(ii) CHD/clogged arteries/heart attack; stroke; diabetes; high blood pressure; arthritis/joint problems	[2]	10
5	(a)	(i) root hair (cells)	[1]	
		(ii) increases surface area	[1]	
		(iii) needed for cell walls/strengthens cell walls	[1]	
	(b)	(i) manure/slurry/compost/animal waste/animal faeces	[1]	
		(ii) easier to apply/works faster/faster acting/known mineral content/ easier to store/ no smell/more soluble/faster acting/content known for NPK/ increases the yield more	[1]	
		(iii) eutrophication	[1]	
		(iv) bloodworms/mayfly/stonefly/rat tailed maggot/ freshwater shrimp	[1]	7
6	(a)	A shoot straight; (ignore height and foil) B shoot straight; (ignore height – [0] if tip drawn) C shoot bent towards light	[3]	
	(b)	Any **three** from: auxin; produced in tip/found in tip; moves to shaded side/on shaded side/LHS/dark side; causes cells to elongate/cells get longer/differential growth; tip bends to light/grows towards light	[3]	
	(c)	phototropism/tropism	[1]	7

					AVAILABLE MARKS
7	(a)	(i)	amino acids	[1]	
		(ii)	stomach; small intestine/ileum/duodenum/villi;	[2]	
	(b)	(i)	no protease enzyme present in 2/only substrate (milk in 2)/ no protease in 2/protease only in 1	[1]	
		(ii)	timer/stop clock	[1]	
		(iii)	amount of milk/substrate/type of milk/amount of protease/ concentration of protease/enzyme concentration	[1]	
		(iv)	colourless/decolourised/clear	[1]	
		(v)	40 °C	[1]	
		(vi)	• carry out at more temperatures/wider or bigger range/ digital thermometer/temperature probe; • between 30 °C and 50 °C (identify a range around 40 °C; • smaller temperature intervals/go up in 5 °C intervals; [2]	[2]	
	(c)		Any **three** from: • lock and key; • enzyme denatured; • structure of enzyme changed/no ES complex formed/substrate no longer fits active site/enzyme is not complementary to active site • protein will not be broken down	[3]	13

AVAILABLE MARKS

8 **(a)** insulin increases – due to increase in blood glucose or have eaten breakfast;
insulin decreases – due to decrease in blood glucose [2]

(b) **Indicative content**
insulin produced by pancreas;
travels in the bloodstream;
acts in liver;
glucose stored/turned into/converted into glycogen;
glucose stored/turned into/converted into fat;
more respiration of glucose;
more uptake of glucose;
which lowers blood glucose sugar/returns blood glucose to normal (if said blood glucose high elsewhere in answer)

Response	**Marks**
Candidates use appropriate terms throughout to give **at least five** points about the action of insulin. They use good spelling, punctuation and grammar skills. Form and style are of a high standard.	[5]–[6]
Candidates use appropriate terms throughout to give **at least three or four** points on insulin from the indicative content. They use satisfactory spelling, punctuation and grammar. Form and style are of a satisfactory standard.	[3]–[4]
Candidates use appropriate terms throughout to give **one or two** points on insulin from the indicative content. They use limited spelling, punctuation and grammar and have made little use of specialist terms.	[1]–[2]
Response not worthy of credit.	[0]

[6] 8

				AVAILABLE MARKS
9	(a)	(i)	spiral wrack; [1]	
		(ii)	spiral wrack decreased to 700 g; bladder wrack decreased to 630 g; serrated wrack decreased to 560 g Any 2 from or spiral wrack decreased by 300 g; bladder wrack decreased by 370 g; bladder wrack decreased by 440 g Any 2 from or spiral wrack decreased 70 g less than bladder wrack/140 g less than serrated wrack [2]	
		(iii)	Any **two** from: • found on upper shore/high up shore/furthest from sea/top of shore; • covered by water for only short time/where shore is drier/gets least H_2O/waits longest till sea comes back; • most exposed to sun/wind [2]	
	(b)		• found on lower shore/closest to sea; • covered by water most of the time/gets lots of water/least likely to dry out/more likely to be covered by waves [2]	7
			Total	**70**