GCSE SCIENCE - BIOLOGY

B2

MARK SCHEME - SUMMER 2014

Question			Marking details	Marks Available
1	(a)	(i)	Any two **for one mark** Disease; Pests/fungus/mould; Climate change; *NOT pod rot*	1
		(ii)	Insufficient/ not enough to meet demand (for chocolate)/OWTTE; *NOT decrease unqualified* Accept suitable reference to loss of income/ less money	
	(b)		15%;	1
	(c)	(i)	Microbe ;	1
		(ii)	Biological control/ biocontrol;	1
	(d)	(i)	Fewer rotted pods than untreated; Answer must be comparative	1
		(ii)	Does not affect other organisms/ does not damage biodiversity;	1
		(iii)	Very few rotted pods/ more effective at controlling pod rot/ less rotted pods than with {Trichoderma/ biological control}/ better at killing the mould;	1
			Question 1 total	**[8]**

Question			Marking details	Marks Available
2	(a)	(i)	Bases;	1
		(ii)	T and C in correct positions;	1
	(b)	(i)	Nucleus; Accept chromosome	1
		(ii)	Twisted/ helix; NOT coil	1
			Question 2 total	**[4]**

Question			Marking details	Marks Available
3	(a)	(i)	On diagram 46 **and** 46;	1
		(ii)	Replace worn out cells/ repair damages tissue;	1
	(b)	(i)	Four; Identical/ same;	2
		(ii)	Gametes;	1
			Question 3 Total	**[5]**

Question			Marking details	Marks Available
4	(a)	(i)	Peristalsis;	1
		(ii)	B;	1
	(b)			3

Food	Enzyme	Digested food
Starch/ carbohydrate;	carbohydrase	glucose
fat	**Lipase;**	fatty acids and **Glycerol;**

	(c)		Absorbs water;	1
			Question 4 Total	**[6]**

Question				Marking details	Marks Available
5	(a)	(i)		Protein; Chemical;	2
	(b)	(i)	I	linear scale; must include number at origin and encompass all readings	1
			II	plots;; +/- ½ small square -1 if line taken back to origin	2
			III	line;	1
		(ii)	I	Increase then decrease; Optimum pH7.5 (from data/ graph) ;	2
			II	Correct readings **from their graph** = 1 mark Correct answer **from their graph** = 1 mark If answer correct but no calculation = 2 marks	2
		(iii)		Temperature affects enzyme activity; Accept reference to varying more than one variable not being a fair test	1
	(c)			Work at {lower/ low} temp (than non- enzyme powders }; Uses less energy/ more economic/ less costly; NOT cleans better or eq.	2
				Question 5 Total	**[13]**

Question			Marking details	Marks Available
6/1	(a)	(i)	A line drawn **outside** cell membrane; Nucleus, vacuole & chloroplasts (not dots) (all needed) correctly drawn; Must be able to distinguish the three different organelles	2
		(ii)	{Controls/regulates/selects} {the movement of substances /what} into and out of cell; *NOT protect cell/maintain shape*	1
	(b)	(i)	I Into the cell ✓; II Into the cell ✓; III Cell B ✓;	3
		(ii)	Diffusion;	1
			Question 6/1 Total	**[7]**

Question			Marking details	Marks Available
7/2	(a)	(i)	Greater;	1
		(ii)	Less;	1
		(iii)	Greater;	1
		(iv)	Less;	1
	(b)		Any **two** from Answers must compare bell jar and human The {diaphragm/rubber sheet} in bell jar model is pulled down during inspiration, whereas in the thorax the diaphragm is flattened. (OWTTE); The (wall of the) bell jar is {rigid/does not move}, whereas (the wall of the) {thorax/chest/ribs/ribcage} is {flexible/moves} (and moves during breathing). (OWTTE); Accept {thorax/ ribcage} expands *NOT ribs expand* The bell jar cavity is filled with air, whereas the thoracic wall is filled with body fluid. (OWTTE); In the bell jar there's a large space around the 'lungs'/balloons in the thorax the space is very small. (OWTTE);	2
			Question 7/2 total	**[6]**

Question			Marking details	Marks Available
8/3	(a)		Place the quadrats randomly within the sample area;	1
	(b)	(i)	Mean = 6.2;	1
		(ii)	Estimated no of lugworms = 6.2 x 3200; = 19 840; Allow ECF from (b)(i) (If answer is correct award 2 marks directly)	2
	(c)		Any ref to evidence not available on surface (to count)/hidden by grass/ {casts/holes/burrows} are <u>hidden by the grass</u>/ earthworms move/ earthworms do not stay in one burrow/ Accept ref to 3D aspect of population of earthworms ie there can be many earthworms at the same vertical point in the soil;	1
			Question 8/3 total	**[5]**

Question	Marking details	Marks Available
9/4	*Indicative content:* Drop leaf in boiling <u>water</u> to {kill the leaf/ burst the chloroplasts/ {burst/destroy} cell membranes/ to get rid of waxy cuticle} Boil the leaf in ethanol/alcohol/methanol to remove the <u>chlorophyll</u> Place the leaf in water to soften it Spread the leaf on a white tile (or any suitable surface) Add iodine solution to the leaf surface to test for starch If <u>leaf</u> turns {blue-black/ black} starch is present 5 – 6 marks The candidate constructs an articulate, integrated account correctly linking relevant points, such as those in the indicative content, which shows sequential reasoning. The answer fully addresses the question with no irrelevant inclusions or significant omissions. The candidate uses appropriate scientific terminology and accurate spelling, punctuation and grammar. 3 – 4 marks The candidate constructs an account correctly linking some relevant points, such as those in the indicative content, showing some reasoning. The answer addresses the question with some omissions. The candidate uses mainly appropriate scientific terminology and some accurate spelling, punctuation and grammar. 1 – 2 marks The candidate makes some relevant points, such as those in the indicative content, showing limited reasoning. The answer addresses the question with significant omissions. The candidate uses limited scientific terminology and inaccuracies in spelling, punctuation and grammar. 0 marks The candidate does not make any attempt or give a relevant answer worthy of credit.	6
	Question 9/4 Total	**[6]**