GCSE Environmental Science - Specimen Material
Unit 2 Investigations in Environmental Science - ISA

Fieldwork Investigation – Marking Guidelines

Valid for submission in xxxx

Please mark in red ink, and use one tick for one mark. Each part of each question must show some red ink to indicate that it has been seen.

Subtotals for each part of each question should be written in the right-hand margin.

Enter the marks for **Section 1** and **Section 2** and the **Total Mark** on the front cover of the answer booklet.

The teacher must sign and date the front cover of the ISA.

The papers must be kept in a secure place and must **not** be returned to the candidates.

The marking guidelines show examples of typical responses that candidates may make. However, teachers should use their professional judgement in deciding whether or not to award marks. If, in the judgement of the teacher, the candidate has provided a response which correctly answers the question, then a mark should be awarded even if this response is not shown in the mark guidance. If necessary, the teacher should annotate the script and/or mark guidance to justify the decision.
In the mark guidance:

- the use of a solidus (/) indicates an alternative answer
- the use of brackets ( ) indicates wording that is not essential in the candidate's answer, but makes the guidance clearer.

In some questions candidates are assessed on using good English, organising information clearly and using specialist terms where appropriate.
Instructions for assessing QWC are given against the appropriate questions in the mark scheme

Section 1			
Question	**Answer**	**Additional guidance**	**Marks**
1(a)	independent variable correctly named	eg at different distances from the footpath	1 mark
1(b)	dependent variable correctly named	eg the number of daisies growing	1 mark
2(a)	may be the dependent or independent variable	eg number of daisies, distance from footpath	1 mark
2(b)	correct method of measurement	this will be dependent upon the answer to part (a), eg counting them, using a ruler	1 mark
3	idea of allowing for random errors/ to be able to spot anomalous results/ to improve reliability		1 mark
4	suitable factor given, eg soil/ amount of sunlight/ wet or dry conditions		1 mark

5	suitable explanation, eg tried to make sure that this condition was the same in all test sites		1 mark
6	suitable data quoted as an example eg Yes: because the data at point **X** did not fit into the rest of the pattern/ there was quite a bit of scatter about the mean **or** No: because all the data was very close to a best fit line	no mark for simply choosing yes or no	1 mark
7(a)	amplified statement gains **2** marks simple correct statement gains **1** mark only eg for **1** mark distance from path does affect the number of daisies **or** eg for **2** marks the number of daisies increases with distance from the path	answer must relate to candidate's own data	2 marks
7(b)	amplified quantitative statement gains **2** marks simple qualitative statement gains **1** mark only eg for **1** mark the bar chart shows that there were far more daisies further away from the path **or** eg for **2** marks up to 2 metres away from the path, there were only 3 daisies per m^2, but beyond 2 metres the number increased a lot		2 marks

8	**Table:** correct headings **and** units all correct for all measured variables table with incomplete headings or units for the measured variables = **1** mark **Graph:**	eg all headings present = **1** mark eg all units present = **1** mark as a 'rule of thumb', add up the total number of headings and units that should be present, then: • all present and correct = **2** marks • some missing, but at least half present and correct = **1** mark • fewer than half present and correct = **0** marks	2 marks
	• x axis: suitable scales chosen and labelled with quantity and units	accept axes reversed it may not always be necessary to show the origin	1 mark
	• y axis: suitable scales chosen and labelled with quantity and units	scale should be such that the plots occupy at least one third of each axis	1 mark
	• points or bars plotted correctly to within ± 1 mm	allow one plotting error out of each 5 points plotted	1 mark
	suitable line drawn on graph or bars correctly labelled on bar chart	allow error carried forward from incorrect points if wrong type of graph/chart, maximum **3** marks if the independent variable is: • *continuous*: should draw a best fit line graph N.B. if no line possible because there is no correlation, candidates should state this on the graph to gain the mark • *categoric*: should draw a bar chart • *discrete*: you may allow either a bar chart or a line graph	1 mark
		Max for Section 1	**18**

Section 2			
9	a categoric variable		1 mark
10	one pair may not be typical/ idea of improved reliability		1 mark
11	so that other factors will be constant	other factors may be named, eg shade/ soil type/ wetness	1 mark
12	9		1 mark
13	any suitable pattern, eg snails seem to prefer west, east, north, south in that order	if simply states more snails on limestone than on sandstone, award 1 mark. cannot really have a pattern when only 2	2 marks
14	bar chart number of snails on y axis type of stone on x axis		1 mark 1 mark 1 mark
15	eg sun/shade/moisture/type of vegetation/type of soil		1 mark
16	any sensible suggestion relating to the preservation of habitat		1 mark
17(a)	idea of checking with alternative data		1 mark

17(b)	Marks awarded for this answer will be determined by the quality of written communication.	
	The answer is coherent and in a logical sequence. It contains a range of appropriate or relevant specialist terms used accurately. The answer shows very few errors in spelling, punctuation and grammar. There is a clear and detailed scientific description of how the scientists should carry out a laboratory investigation into species distribution so that the method gives valid results.	**4**
	The answer has some structure and the use of specialist terms has been attempted, but not always accurately. There may be some errors in spelling, punctuation and grammar. There is a scientific description of how the scientists should carry out a laboratory investigation into species distribution so that the method gives valid results, but there is a lack of clarity and detail.	**2-3**
	The answer is poorly constructed with an absence of specialist terms or their use demonstrates a lack of understanding of their meaning. The spelling, punctuation and grammar are weak. There is a brief description of how the scientists should carry out a laboratory investigation into species distribution using a method that gives results, which has little clarity and detail.	**1**
	No relevant content.	**0**
	Examples of scientific points that may contribute to a candidate's response: • equal numbers of pieces of sandstone and limestone • quartz to act as a control • suitable number of snails • leave for fixed time • count number of snails by each piece • repeat several times • calculate mean • any control variable mentioned, eg temperature, moisture	
	Max for Section 2	**16**
	Total for ISA	**34**