GCSE SCIENCE COURSEWORK (new spec)

Commentary on Exemplar ISA

Science BU1.x – Microorganisms   Candidate Jay Sue Flude - 40/50

Q. No.	Comment	Mark
	Section 1	
1	A website has been quoted, and the reference to the book is sufficiently detailed with title and author. The comment on the usefulness of the book is just sufficient to enable the award of a second mark, but as both sources were not commented on,3 marks cannot be awarded.	2
2	A suitable control variable has been identified. Values for control variable identified however what "0.1cm3 of bacteria" would represent is unclear. In the investigation the 'bacteria culture' will be diluted with disinfectant. It is not clear what is meant by the last sentence. A diagram may have helped. On balance two marks is appropriate here.	2
3	The equipment list omits a Bunsen burner, referred to in step 4. On step 3 of the method, it is not clear which 'bacteria solution' the candidate is referring to. It appears that it's the neat culture, but the candidate probably intends this to be the bacteria + disinfectant mixture that has just been made up (in steps 1 & 2). Taping the lid of the dish is an appropriate safety measure. In step 7, there is no indication of temperature either here or in the equipment list. Some control variables identified (eg volumes, time) but others omitted (eg temperature). Step 8 identifies measurements to be made. The method allows the collection of valid results. The answer is coherent and uses a range of specialist terms. Spelling is generally good, as is punctuation, occasional errors, eg 'pippete' and the omission of one or two capital letters. This QWC would fall into the higher mark range. Some hazards are identified. There is no reference to burning risk when using flames or to other issues when working with bacteria such as the need for sterile agar/Petri dishes. The answer just falls within the higher category as a whole, there are some omissions in several of the descriptors but the method could be followed by another student and would give valid results. The candidate also indicates replication (to improve the quality of results) though does not refer to repeatability.	7
4	An alternative method is outlined briefly. There is no specific detail (although full procedures are not required). It would be difficult for anyone to follow this. Two suggestions are given as to why the method would not be as good as the chosen one.	2
5	The 'average' column is unnecessary as this is a derived value. Concentration is referred to as 'strength'; the unit (%) is given. Reference to number of bacteria is sufficient to imply numbers of colonies, in this case 'bacteria that grew' is the parameter and 'number' is the unit.	2
	Total for Section 1	**16**

Q. No.	Section 2	Mark
1(a)	Reference to bacteria, rather than 'bacterial colonies' is acceptable here. All three variables have been correctly identified.	3
1(b)	There is a clear statement that repeats were not carried out (replication within the method does not count as a repeat). There is no reference as to specific values from the results.	2
1(c)	The correct range is quoted. The values may be given in either order. A suitable value within the range has been given and the reason is acceptable.	3
1 (d)	The candidate does not quote values from the results, only correctly describing the overall trend within the results. There is no reference to the reducing effect (of increasing disinfectant concentration) at higher concentrations.	2
1(e)	The response indicates the other results support the hypothesis. There is no reference to trends, patterns or specific values.	1
2(a)	The axes are correctly labelled (units are not essential here) and the curve is an appropriate reflection of the data.	2
2(b)	A clear indication that Case Studies 1 & 2 support the hypothesis, and a reference to the general trend in both. However there is no reference to the anomaly in Case Study 2. There is recognition that Case Study 3 is inappropriate along with an explanation as to why it is not appropriate.	2
2(c)	The candidate states that the advice is not supported, and explains the reason for this. The candidate states an advantage of 'Ger-off' and identifies further trials that should be done with 'Ger-off'.	3
3	An idea from the investigation has been linked to context, and findings from the investigation have been related to the context. However there is little detail in the explanation. Further information from research has been quoted.	2
4	Both X and Y axes are fully labelled, with units. The points are plotted correctly (to within a tolerance of 1mm). An appropriate curve is drawn. A suitable straight line would also have been acceptable from these plots.	4
	Total for Section 2	**24**

Total for both sections	40/50