

Mark scheme January 2004

GCE

Geography B

Unit GGB6

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Question 1**(a) (i) Notes for Answers**

The answer should establish the general aims and purpose of the investigation. This could be to test out textbook or classroom theory in the real world; or it could be to study an environment – e.g. to investigate the changes in characteristics along the course of a drainage channel. Hypotheses should be clearly stated in the correct form; research questions should show clearly what is to be studied and tested. They should develop out of the aims of the study.

Level 1 *General aims are stated, but these may be vague and unclear. Questions may be posed but these are not clearly stated as hypotheses or research questions.*

1-2 marks

Level 2 *At the lower end of the level, one hypothesis or research question is clearly stated.
At the top of the level it is linked to and develops from the aim of the fieldwork.*

3-5 marks**(ii) Notes for Answers**

Any method of presentation, which can link to the hypothesis, is acceptable. The answer should show how the method was used: 'a handbook on how to use that method'.

Diagrams are a very suitable way of showing how the technique should be used. Reasons for the choice of technique should include clarity of display, suitability of the technique for showing the particular type of information, and ease with which the data can then be analysed, compared, etc.

Level 1 *Basic identification of a method.
Simple description of the technique.
There is no relevant reference to the particular purpose of the chosen technique.*

1-3 marks

Level 2 *The answer describes the method clearly.
The method is clearly linked to the aims of the investigation.
Clear reasons are given for the choice of method.
The answer may refer to the clarity of display or to its suitability for analysing to test the hypothesis. If both of these are done the answer will be at the top of the level.*

4-8 marks**(b) (i) Notes for Answers**

The answer must be based on fieldwork that has been carried out by the candidate. It might refer to both primary and secondary data. Ideally it should be written in the first person. It should be internally consistent and, ideally, should show a sense of place. It should refer back to the piece of fieldwork named in part (a).

Mark Scheme

Point mark.

Well expressed general findings, credit up to 2 marks.

Specific results – e.g. correlation values, changes in relation to distance, specific references to proof or disproof of hypotheses – credit up to 4 marks.

4 marks

(ii) **Notes for Answers**

Requires some appreciation of the geographical significance of the results and how the results relate to general geographical theories.

There should be some attempt to evaluate the results.

The results should be considered in the context of the aims and/or of the specific environment being considered.

There should be some consideration of the way in which the study has confirmed, reinforced, or perhaps even contradicted, previous understanding.

There are likely to be some anomalies worthy of mention and discussion.

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Level 1 *A ‘text book’ answer with little reference to the personal study. The answer is presented in general terms with no direct reference to the candidate’s own results. Any attempts to relate findings to understanding are written in the most general terms*

1-3 marks

Level 2 *The answer establishes some clear connection between the results and the candidate’s understanding of the environment and/or theory being studied. The candidate moves on from consideration of the hypothesis to try to explain why anomalies may not have fitted the hypothesis.*

4-8 marks

Question 2**(a) Notes for Answers****(ii)**

GNP/Capita				Carbon emissions (tonnes/person/year)		
		Rank 1		Rank 2	D	D ²
Brazil	4790	4	1.7	9.5	-5.5	30.25
China	860	10	2.8	8	2	4
Colombia	2180	8	1.7	9.5	-1.5	2.25
Germany	28280	2	10.5	3	-1	1
India	370	11	1.1	11	0	0
Jamaica	1550	9	4.0	7	2	4
Kenya	340	12	0.2	12	0	0
Malaysia	4530	5	5.6	6	-1	1
Russia	2680	7	10.7	2	5	25
S. Africa	3210	6	7.3	5	1	1
UK	20870	3	9.5	4	-1	1
USA	29080	1	20.0	1	0	0
				ΣD^2 69.5		

5 marks

$$(iii) \quad 1 - \frac{6 \times 69.5}{12^3 - 12} = 1 - \frac{417}{1728 - 12}$$

$$= 1 - \frac{417}{1716}$$

$$= 1 - 0.243$$

$$= 0.76$$

3 marks

- (iv) The answer is 0.76. This is greater than 0.712, which would have been significant at the 99% level of confidence with 12 pairs of variables. This result is significant at the 99% level of confidence. In other words, the result would have occurred by chance only once in one hundred times. Therefore, the null hypothesis can be rejected with 99% certainty.

3 marks**Mark Scheme**

- (i) There is no correlation between GNP/capita and carbon dioxide emissions. **1 mark**

- (ii) 1 mark
4 x D² correct = 4 marks

$$\Sigma D^2 \text{ correct} = 1 \text{ mark}$$

- (iii) Correct answer = 3 marks
1 or 2 marks for an answer which starts out correctly and shows the working.

- (iv) Point mark
1 mark for rejection of the nul.
1 mark for quoting the correct level of significance.
1 mark for explaining why that is significant.

(b) Notes for Answers

The relationship is strong. We can be at least 99% certain that it did not arise by chance. However, Spearman does not prove that there is a causal link between the two variables. Rich countries generally use more energy than poorer countries. This means that they usually burn more fossil fuels and so produce more CO₂ emissions. However, there are anomalies in this table.

The technique is useful for comparing ranks, but it does not show anything about the distance between variables in the ranks.

The formula is straight forward and comparatively easy to calculate.

Mark Scheme

Level 1 *The answer comments on the relationship at a superficial level.* **0-4 marks**

Level 2 *The answer considers the relationship clearly.*

The answer shows some understanding of at least one strength or weakness of the technique at a simple level. **5-9 marks**

Level 3 *The answer recognises some of the anomalies and suggests reasons for these.*

Strengths and weaknesses of the method are discussed clearly and show a full understanding of the technique. **10-13 marks**